ADDRESSFACTORY

ADDRESSFACTORY DIRECT and ADDRESSFACTORY AUTOMATIC

Automatic interfaces user guide

Deutsche Post
DIALOG MARKETING

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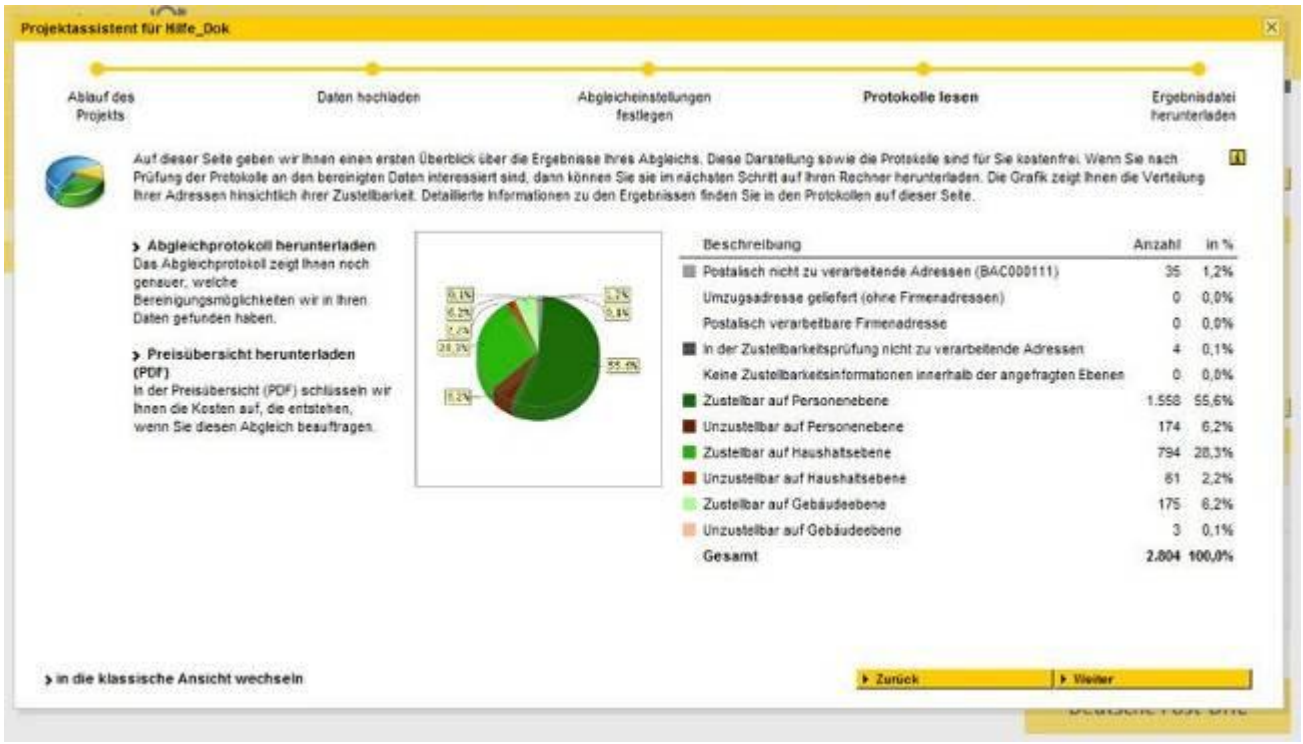
1 Introduction to the ADDRESSFACTORY system

Version 3 of the ADDRESSFACTORY system represents the third generation of the ADDRESSFACTORY product line from Deutsche Post Direkt. The system enables you to have your address data corrected and enhanced, and any duplicates removed by Deutsche Post Direkt. The ADDRESSFACTORY WEB, ADDRESSFACTORY AUTOMATIC, ADDRESSFACTORY DIRECT and ADDRESSFACTORY TAPE product variants are available to you for this.

- The **ADDRESSFACTORY WEB** product variant was created for the interactive definition of address comparisons. When this is used, the user's input data is transferred to Deutsche Post Direkt via a web browser. You can define the comparison settings yourself in the ADDRESSFACTORY WEB system, which means that you can redefine the details of your comparison with each project. The data that has been subjected to the comparison can also be downloaded by the user via a web browser.
- The **ADDRESSFACTORY AUTOMATIC** product variant is geared towards users who wish to regularly have large address databases compared by Deutsche Post Direkt with one or more clearly defined comparison settings. A Deutsche Post Direkt employee defines the comparison settings together with you. Then you simply upload data to the Deutsche Post Direkt secure data exchange platform (DEP) as required. Once the data has been compared, we will inform you via e-mail about the details of the comparison. You can obtain the compared results via Deutsche Post Direkt's data exchange platform again. The ADDRESSFACTORY AUTOMATIC product variant is particularly suitable for integration into your systems using which you periodically perform automated address comparisons. You will find out here how you can perform a first quick run-through of a comparison.
- With the **ADDRESSFACTORY DIRECT** product variant, you integrate the ADDRESSFACTORY system for individual record inquiries into your own applications via a web service interface. You will find out here how you can perform your first quick run-through of a comparison.
- With the **ADDRESSFACTORY TAPE** product variant, you send your data to Deutsche Post Direkt electronically or on a data carrier. An adviser handles your comparison and recommends optimum comparison settings to you. You can find further details about the ADDRESSFACTORY TAPE product variant on the website of the Deutsche Post Direkt online services.


Projektassistent für Hilfe_Dok
Ablauf des Projekts
Daten hochladen
Abgleicheinstellungen festlegen
Protokolle lesen
Ergebnisdatei herunterladen
Auf dieser Seite geben wir Ihnen einen ersten Überblick über die Ergebnisse Ihres Abgleichs. Diese Darstellung sowie die Protokolle sind für Sie kostenfrei. Wenn Sie nach Prüfung der Protokolle an den bereinigten Daten interessiert sind, dann können Sie sie im nächsten Schritt auf Ihren Rechner herunterladen. Die Grafik zeigt Ihnen die Verteilung Ihrer Adressen hinsichtlich ihrer Zustellbarkeit. Detaillierte Informationen zu den Ergebnissen finden Sie in den Protokollen auf dieser Seite.
› Abgleichprotokoll herunterladen
Das Abgleichprotokoll zeigt Ihnen noch genauer, welche Bereinigungsmöglichkeiten wir in Ihren Daten gefunden haben.
› Preisübersicht herunterladen (PDF)
In der Preisübersicht (PDF) schlüsseln wir Ihnen die Kosten auf, die entstehen, wenn Sie diesen Abgleich beauftragen.
Beschreibung Anzahl in %
Postalisch nicht zu verarbeitende Adressen (BAC000111) 35 1,2%
Umzugsadresse geliefert (ohne Firmenadressen) 0 0,0%
Postalisch verarbeitbare Firmenadresse 0 0,0%
In der Zustellbarkeitsprüfung nicht zu verarbeitende Adressen 4 0,1%
Keine Zustellbarkeitsinformationen innerhalb der angefragten Ebenen 0 0,0%
Zustellbar auf Personenebene 1.558 55,6%
Unzustellbar auf Personenebene 174 6,2%
Zustellbar auf Haushaltsebene 794 28,3%
Unzustellbar auf Haushaltsebene 61 2,2%
Zustellbar auf Gebäudeebene 175 6,2%
Unzustellbar auf Gebäudeebene 3 0,1%
Gesamt 2.804 100,0%
› in die klassische Ansicht wechseln
Zurück
Weiter

2 ADDRESSFACTORY DIRECT

2.1 Features of the ADDRESSFACTORY DIRECT system

With the ADDRESSFACTORY DIRECT product variant, you integrate the ADDRESSFACTORY system for individual record inquiries into your own applications via a web service interface. In addition, we also provide you with a web user interface for manual individual record inquiries, which illustrates the work of our web service interface and can also be used for spontaneous manual inquiries.

Individual record inquiries refer to the comparison of data relating to one individual. Typically, one of these inquiries will contain name information and at least one address.

The ADDRESSFACTORY DIRECT system enables you to use all the comparison modules offered by Deutsche Post Direkt on your data (see also the Overview of the ADDRESSFACTORY comparison modules). The DoubleClean module is not included as it does not have any benefit for individual record inquiries. Unlike the WEB and AUTOMATIC product variants, with the ADDRESSFACTORY DIRECT system you can also request personal credit rating information.

On average, the ADDRESSFACTORY DIRECT system responds to inquiries in between two and six seconds.

2.1.1 An example comparison with ADDRESSFACTORY DIRECT

A comparison with the ADDRESSFACTORY DIRECT system may appear as follows (in an XML notation):

An inquiry is submitted about the individual Hans Mustermann, residing at Sträßchenweg 10, 53114 Bonn, Germany.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<AFInData xmlns="http://www.postdirekt.de/schema/af/data/v_1_1">
    ...
    <InRecord fileType="Merge" fileId="0" recordId="1">
        <NameItem>
            <Vorname>Hans</Vorname>
            <Name>Mustermann</Name>
        </NameItem>
        <AdrItem>
            <Hausanschrift>
                <Strasse>Sträßchenweg</Strasse>
                <Hausnr>10</Hausnr>
                <Plz>53114</Plz>
                <Ort>Bonn</Ort>
            </Hausanschrift>
        </AdrItem>
    </InRecord>
</AFInData>
```

The ADDRESSFACTORY DIRECT system responds to this (for a detailed explanation of the system's status keys, see also Introduction to the ADDRESSFACTORY key system):

- The street entered, "Sträßchenweg", has been corrected to "Sträßchensweg".
- The postal code entered, "53114", has been corrected to "53113".
- A town district, political information (district, municipality, etc.) and the country are added to the street address.

- The individual Hans Mustermann is not known to Deutsche Post Direkt at Sträßchensweg 10, but the building is known to the company.
- Although the individual is not known, it has been possible to add the form of address “Mr.” based on the typically male first name “Hans”.
- These responses are primarily determined by the configuration that Deutsche Post Direkt has defined for this comparison. In this case, it is evident that only the BasicAddressCheck and FormalNameCheck modules were performed with various settings (for more details on modules, comparison settings and configurations, see also Basic concepts and Overview of the ADDRESSFACTORY comparison modules).

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<AFOutData xmlns="http://www.postdirekt.de/schema/af/data/v_1_1">
    <OutRecord fileType="Merge" sequenceId="1" fileId="0" recordId="0">
        <NameItem>
            <Anrede>Herr</Anrede>
            <Vorname>Hans</Vorname>
            <Name>Mustermann</Name>
        </NameItem>
        <AdrItem>
            <Hausanschrift>
                <Strasse>Sträßchensweg</Strasse>
                <Hausnr>10</Hausnr>
                <Plz>53113</Plz>
                <Ort>Bonn</Ort>
                <Ortsteil>Zentrum</Ortsteil>
                <Gemeinde>Bonn, Stadt</Gemeinde>
                <Kreis>Bonn, Stadt</Kreis>
                <RegBezirk>Reg.-Bez. Köln</RegBezirk>
                <Bundesland>Nordrhein-Westfalen</Bundesland>
                <Land>Deutschland</Land>
            </Hausanschrift>
        </AdrItem>
        <StatusItem>
            <PDStatusCodeItem>
                <ModuleCodes name="FNC">
                    <StatusCode>FNC050107</StatusCode>
                    <StatusCode>FNC401107</StatusCode>
                    <StatusCode>FNC030102</StatusCode>
                </ModuleCodes>
                <ModuleCodes name="BAC">
                    <StatusCode>BAC140107</StatusCode>
                    <StatusCode>BAC010107</StatusCode>
                    <StatusCode>BAC144107</StatusCode>
                    <StatusCode>BAC104107</StatusCode>
                    <StatusCode>BAC010102</StatusCode>
                </ModuleCodes>
            </PDStatusCodeItem>
        </StatusItem>
    </OutRecord>
</AFOutData>
```

2.2 ADDRESSFACTORY DIRECT user interface

2.2.1 A first quick run-through of a comparison

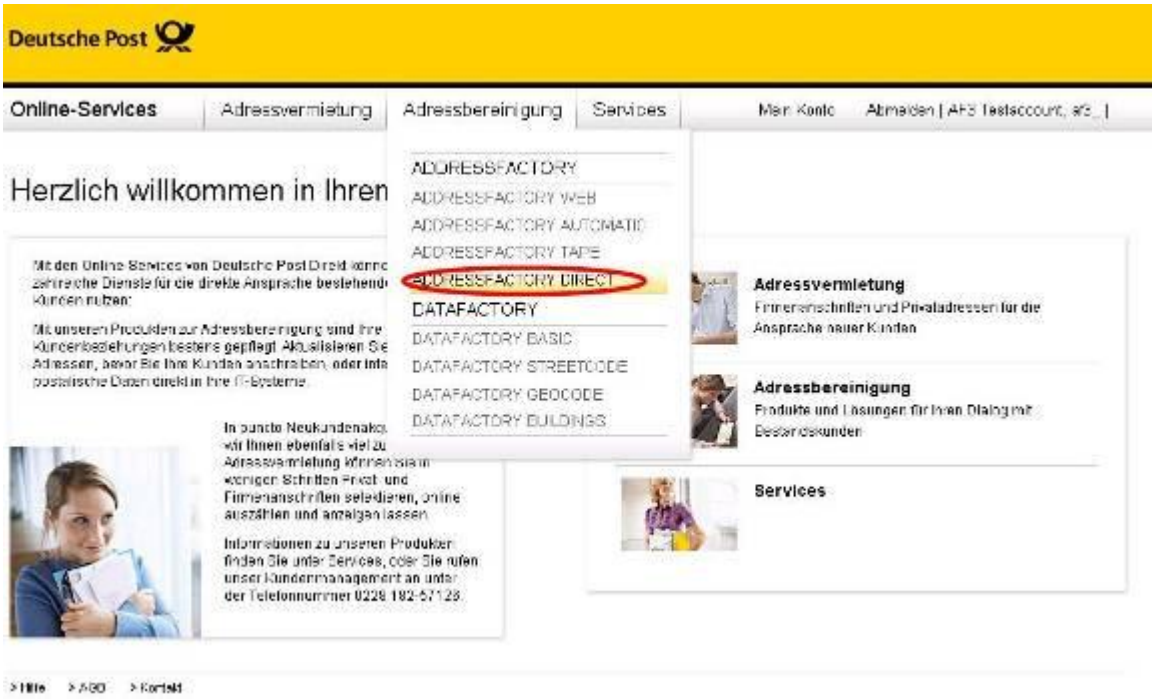
The following description guides you through your first address comparison USING THE ADDRESSFACTORY DIRECT user interface.

The description assumes that you already have access to the ADDRESSFACTORY DIRECT system. You should also already have been in contact with a Deutsche Post Direkt employee who has prepared the ADDRESSFACTORY DIRECT system for your first use of it.

Please note: The following guide illustrates the use of ADDRESSFACTORY DIRECT via the associated web user interface. For information on using the ADDRESSFACTORY DIRECT web service, please read the "ADDRESSFACTORY DIRECT programming interface" section.

2.2.1.1 Logging into the online services

Log in to the Deutsche Post Direkt online services at http://www.postdirekt.de/online-services. Click on **Adressbereinigung**. Then click on **ADDRESSFACTORY DIRECT**.

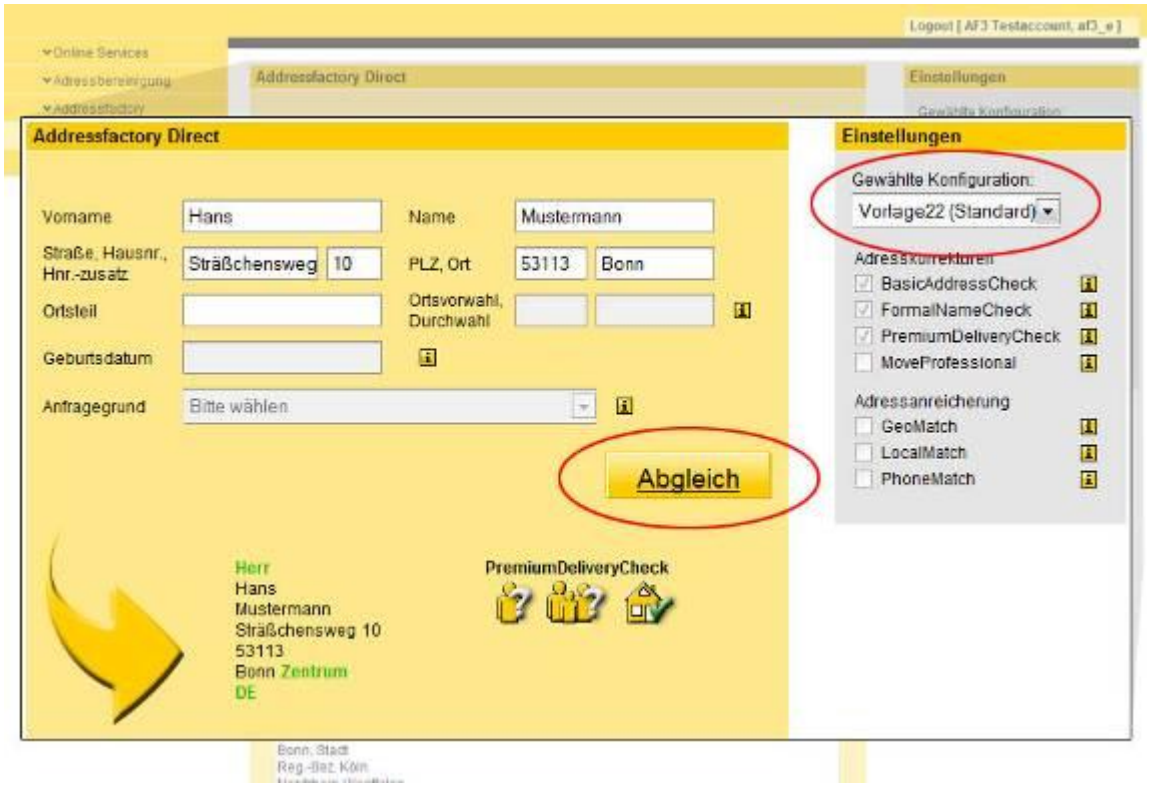


2.2.2 A first quick run-through of a comparison

As a minimum, enter a street, a house number and a postal code in the relevant fields. To obtain a more informative response, you should also enter the first name and surname of an individual (formerly) residing at the address.

Under Gewählte Konfiguration [Selected configuration] in the menu on the right-hand side, select one of the possible comparison settings (configurations) that has been assigned to you by a Deutsche Post Direkt employee. The system will ideally preset this with your “Standardkonfiguration” [Standard configuration] that the Deutsche Post Direkt employee considers makes sense for your “normal” comparisons.

Then click on **Abgleich** [Comparison] to have the record entered compared using the selected comparison settings.



The system shows the result of your comparison in the lower part of the screen.

- In the example, the system has added the town district “Zentrum” [Center] and the country code “DE”.
- The PremiumDeliveryCheck module has identified the building “Sträßchensweg 10, 53113 Bonn” as deliverable. However, it does not know either the “Mustermann” household or its member “Hans Mustermann” at this street address.
- Finally, the FormalNameCheck module has identified “Hans” as a male first name and (even though it does not know a Hans Mustermann at the specified address) has concluded that the form of address for the specified individual must be “Herr” [Mr.].

2.2.3 Advanced functions of the ADDRESSFACTORY DIRECT user interface

2.2.3.1 Comparison of PO boxes, Packstations and Postfiliale Direkt

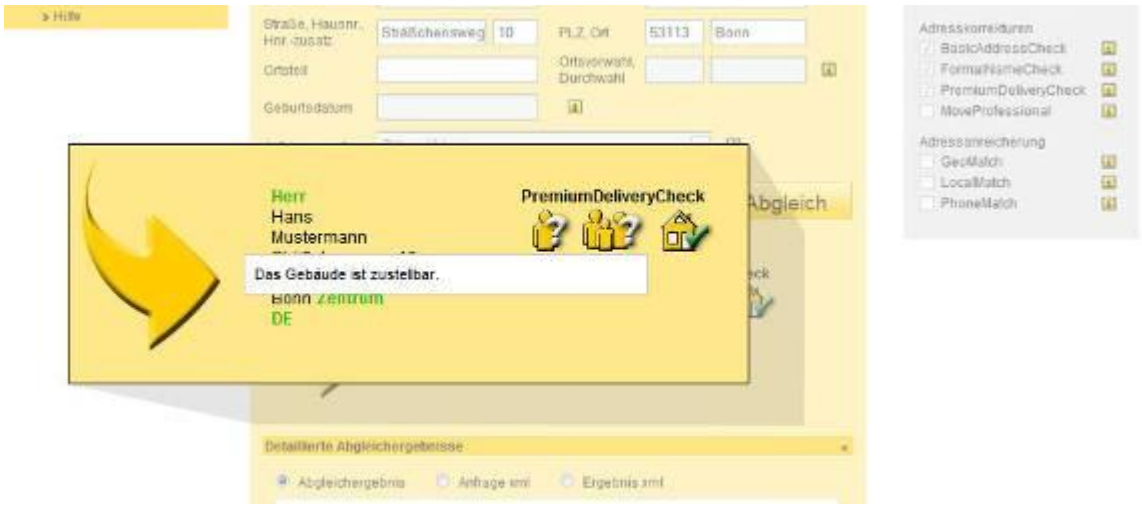
Even though the ADDRESSFACTORY DIRECT user interface does not offer any input fields for PO boxes, Packstations and Postfiliale Direkt, you can still compare these types of addresses using the application.

To do this, enter information such as “Postfach 4711” [PO box 4711], “Packstation 101” [Packstation 101] or “Postfiliale 503” [Postfiliale 503] in the street field. Alternatively, you can also enter the PO box number, the Packstation number or post office number in the house number field of the street address.

2.2.3.2 Further information on comparison settings and results

Hover the cursor over the module names in the menu on the right-hand side to find out detailed information about what details have been preset for you within the individual modules.

Hover the cursor over the data and icons shown in color in the lower part of the screen to find out more information about the work that has been carried out.



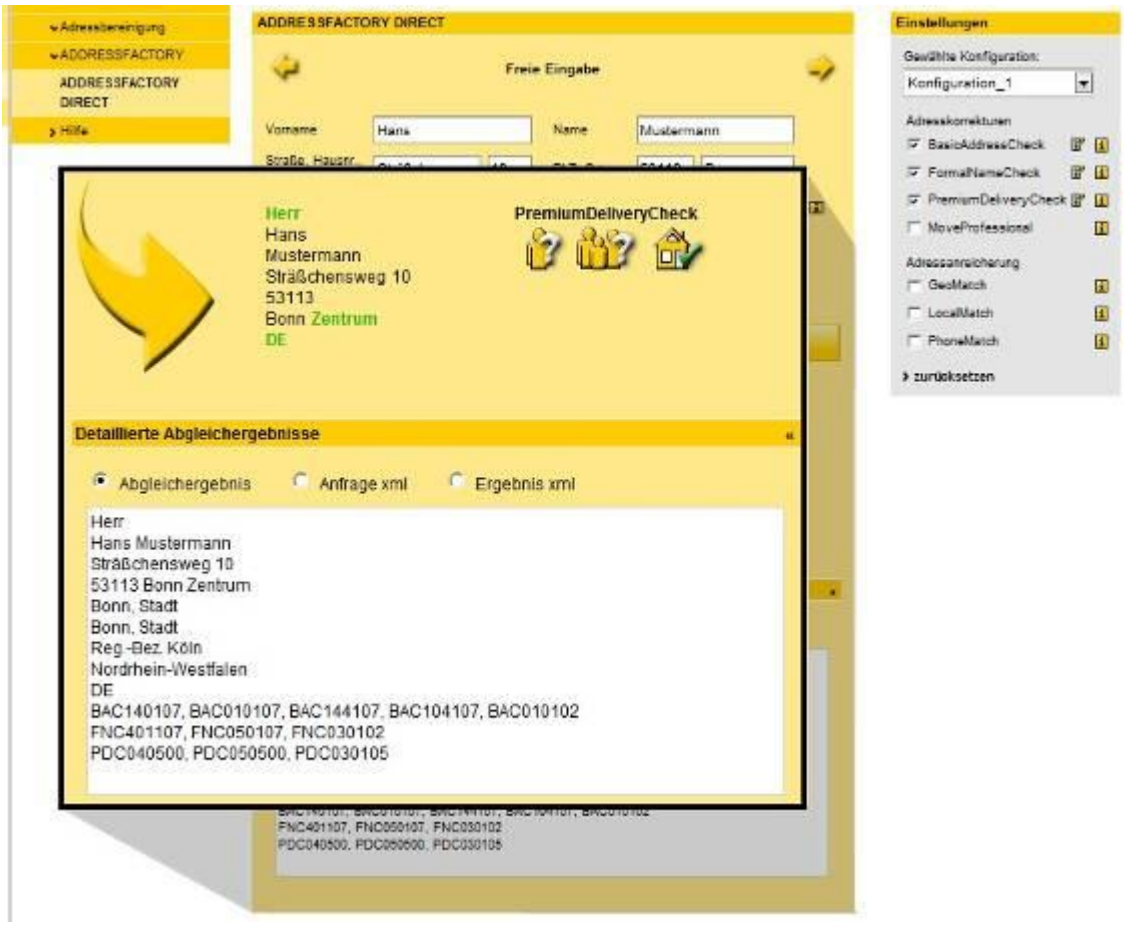
2.2.3.3 Viewing detailed comparison results

The ADDRESSFACTORY DIRECT user interface presents the main results of your comparisons in visual form. This compact display is not sufficient in two cases:

- if you wish to gain an impression of input and output as they are represented in the actual ADDRESSFACTORY DIRECT programming interface.
- if you require more detailed results than those presented visually in the user interface.

In this case, you should open the Detaillierte Abgleichergebnisse [Detailed comparison results] panel, where you will be offered the following views.

- The Abgleichergebnis [Comparison result] view contains all the comparison results including the status keys, roughly structured in the form of text. It is particularly easy for you to copy this information to your computer's clipboard and process it further from there.
- The Anfrage XML [XML inquiry] view contains the XML fragment that the user interface has sent to the ADDRESSFACTORY DIRECT programming interface for your comparison. The XML fragment illustrates how the programming interface works. It is also the most precise information that you can provide to a Deutsche Post Direkt employee for diagnostic purposes.
- Similarly to this, the Ergebnis XML [XML result] view contains the XML fragment that the ADDRESSFACTORY DIRECT programming interface sent back in response to your inquiry.


Adressbereinigung
ADDRESSFACTORY
ADDRESSFACTORY DIRECT
Hilfe
ADDRESSFACTORY DIRECT
Freie Eingabe
Vorname
Hans
Name
Mustermann
Herr
Hans
Mustermann
Sträßchensweg 10
53113
Bonn Zentrum
DE
PremiumDeliveryCheck
Detaillierte Abgleichergebnisse
Abgleichergebnis
Anfrage xml
Ergebnis xml
Herr
Hans Mustermann
Sträßchensweg 10
53113 Bonn Zentrum
Bonn, Stadt
Bonn, Stadt
Reg.-Bez. Köln
Nordrhein-Westfalen
DE
BAC140107, BAC010107, BAC144107, BAC104107, BAC010102
FNC401107, FNC050107, FNC030102
PDC040500, PDC050500, PDC030105
Einstellungen
Gewählte Konfiguration:
Konfiguration_1
Adresskorrekturen
BasicAddressCheck
FormalNameCheck
PremiumDeliveryCheck
MoveProfessional
Adressanreicherung
GeoMatch
LocalMatch
PhoneMatch
zurücksetzen

2.3 ADDRESSFACTORY DIRECT programming interface

2.3.1 A first quick run-through of a comparison

The following description guides you through your first comparison using the ADDRESSFACTORY DIRECT system.

Please note: The ADDRESSFACTORY DIRECT *system is geared towards programmers who wish to embed the ADDRESSFACTORY system in their own systems. If you are unsure whether the* ADDRESSFACTORY DIRECT *product variant is the right choice for your use case, we recommend the* Introduction.

The easiest way of using ADDRESSFACTORY DIRECT involves using the command line client supplied with it. You can find an example of the actual programming against the ADDRESSFACTORY DIRECT server here.

Please note: For the following steps, you will need an installation of the Java Runtime Environment (JRE), Version 1.5.0 or later. The Java software must be included in your system path. An easy way of checking whether these requirements are met is to enter the command `java -version` *in the command line. The command should generate an output that resembles the one below:*

```
java version "1.6.0_20"
Java(TM) SE Runtime Environment (build 1.6.0_20-b02)
Java HotSpot(TM) Client VM (build 16.3-b01, mixed mode, sharing)
```

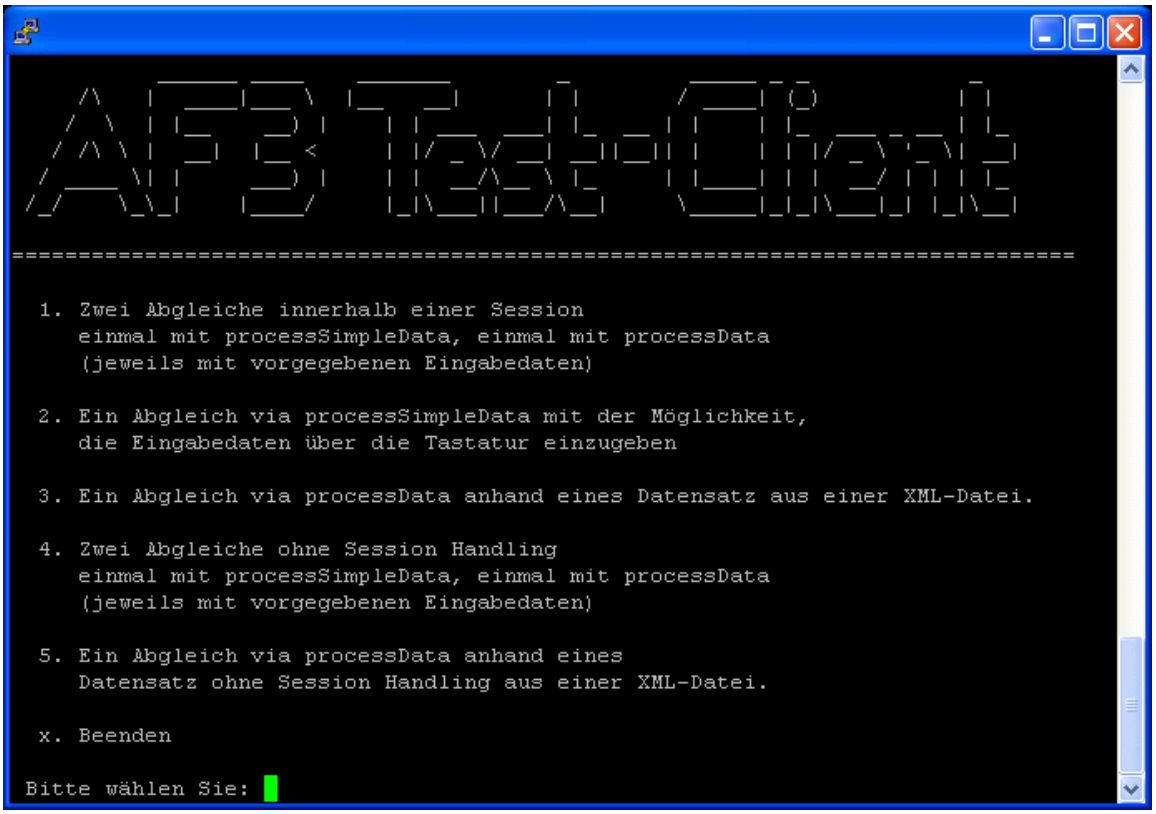
2.3.1.1 Installation of the distribution

- Unpack the binary distribution provided by Deutsche Post Direkt `af-direct-jaxws-client-<VERSION>-binary.zip`. In the section below, we assume that you have unpacked the distribution to the directory `C:\af-direct` on a Windows system.
- Open the directory `C:\af-direct` and copy the file `AF3DirectTestClient.properties.template`. Name the copy `AF3DirectTestClient.properties`.
- If you use a web proxy to access the public Internet from your network, open the file `AF3DirectTestClient.properties` using a text editor. Edit the settings `proxyHost` and `proxyPort`. If your web proxy requires authentication from you, you should also edit the settings `proxyUsername` and `proxyPassword`. Save your changes and close the file.

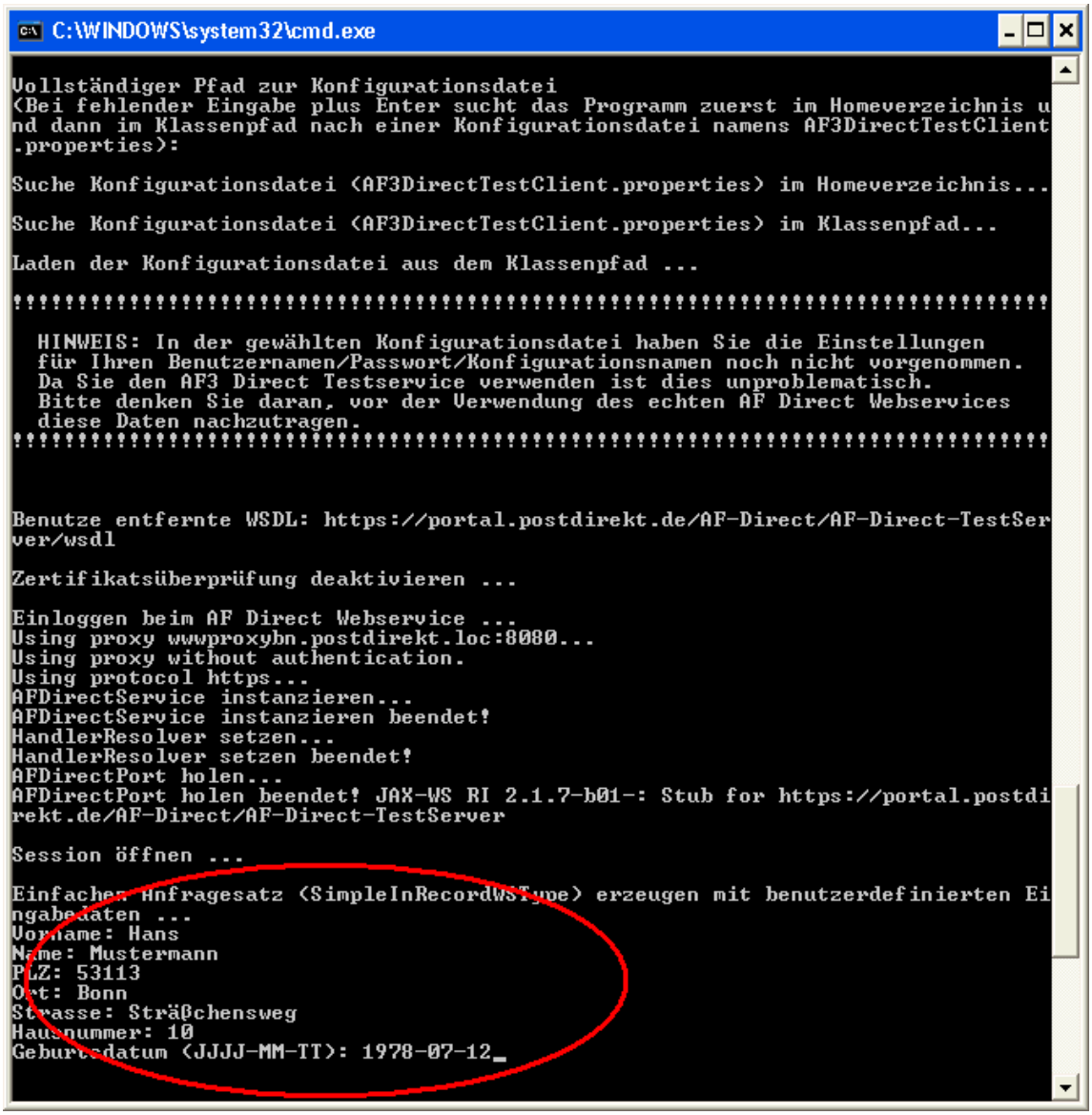
2.3.1.2 Performance of the comparison

Please note: The following description guides you through a comparison against the ADDRESSFACTORY DIRECT test server. This test server implements the same interface as the real ADDRESSFACTORY DIRECT *server, but only returns static changes to the data supplied by you and a number of made-up status keys.*

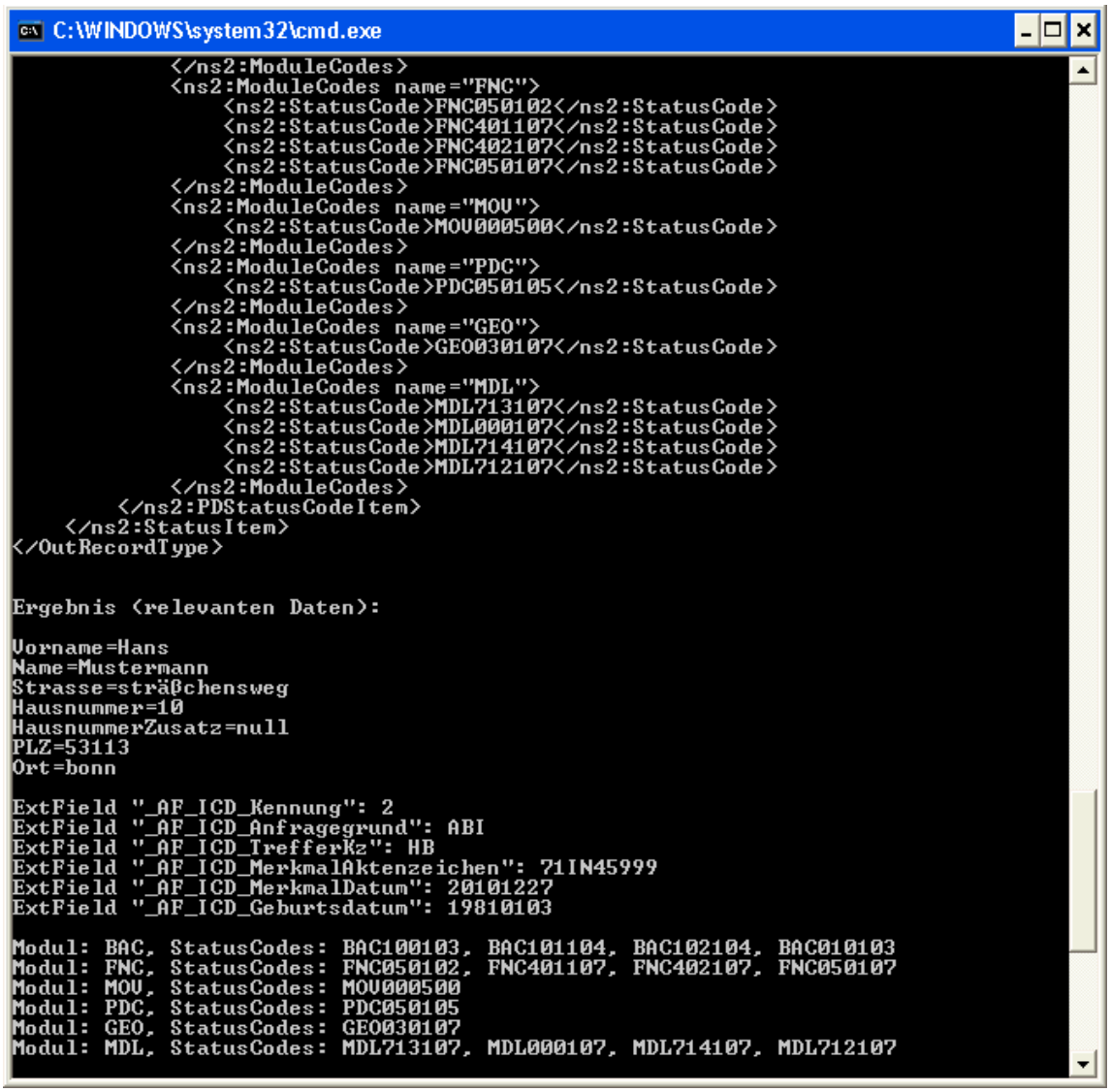
- Start the command line client of the ADDRESSFACTORY DIRECT system. On a Windows system, double-click on the script `startclient.bat`.


1. Zwei Abgleiche innerhalb einer Session
einmal mit processSimpleData, einmal mit processData
(jeweils mit vorgegebenen Eingabedaten)
2. Ein Abgleich via processSimpleData mit der Möglichkeit,
die Eingabedaten über die Tastatur einzugeben
3. Ein Abgleich via processData anhand eines Datensatz aus einer XML-Datei.
4. Zwei Abgleiche ohne Session Handling
einmal mit processSimpleData, einmal mit processData
(jeweils mit vorgegebenen Eingabedaten)
5. Ein Abgleich via processData anhand eines
Datensatz ohne Session Handling aus einer XML-Datei.
x. Beenden
Bitte wählen Sie:

- Select option “2” in order to be able to input your own data using the keyboard.
- Respond to the following request for the complete path of the configuration file by pressing “Enter” and without having entered any further data.


C:\WINDOWS\system32\cmd.exe
Vollständiger Pfad zur Konfigurationsdatei
(Bei fehlender Eingabe plus Enter sucht das Programm zuerst im Homeverzeichnis u
nd dann im Klassenpfad nach einer Konfigurationsdatei namens AF3DirectTestClient
.properties):
Suche Konfigurationsdatei (AF3DirectTestClient.properties) im Homeverzeichnis...
Suche Konfigurationsdatei (AF3DirectTestClient.properties) im Klassenpfad...
Laden der Konfigurationsdatei aus dem Klassenpfad ...
HINWEIS: In der gewählten Konfigurationsdatei haben Sie die Einstellungen
für Ihren Benutzernamen/Passwort/Konfigurationsnamen noch nicht vorgenommen.
Da Sie den AF3 Direct Testservice verwenden ist dies unproblematisch.
Bitte denken Sie daran, vor der Verwendung des echten AF Direct Webservices
diese Daten nachzutragen.
Benutze entfernte WSDL: https://portal.postdirekt.de/AF-Direct/AF-Direct-TestSer
ver/wsdl
Zertifikatsüberprüfung deaktivieren ...
Einloggen beim AF Direct Webservice ...
Using proxy wwwproxybn.postdirekt.loc:8080...
Using proxy without authentication.
Using protocol https...
AFDirectService instanzieren...
AFDirectService instanzieren beendet!
HandlerResolver setzen...
HandlerResolver setzen beendet!
AFDirectPort holen...
AFDirectPort holen beendet! JAX-WS RI 2.1.7-b01-: Stub for https://portal.postdi
rekt.de/AF-Direct/AF-Direct-TestServer
Session öffnen ...
Einfachen Anfragesatz (SimpleInRecordWSType) erzeugen mit benutzerdefinierten Ei
ngabedaten ...
Vorname: Hans
Name: Mustermann
PLZ: 53113
Ort: Bonn
Strasse: Sträßchensweg
Hausnummer: 10
Geburtsdatum (JJJJ-MM-TT): 1978-07-12

- The command line application initially outputs a whole set of diagnostic information that you can ignore. You can particularly ignore the message about the lack of entries for the user name, password and configuration. The fact that this information has not been entered is not problematic for comparisons against the test server.
- In response to the following input prompts, enter a first name and surname, a postal code, a town/city, a street, a house number and a date of birth in the specified notation.



Please note: It is sufficient to enter a made-up date of birth in this case. The command line application only asks for the date of birth to be able to perform a personal credit rating inquiry where this has been ordered. However, it has no function in this initial comparison.

- The command line application outputs the result of this inquiry in a structured XML notation from which the object model can be read and which you will be able to use to access the result data in the course of later programming.
- The command line application also extracts the most important detailed results and displays them a second time under “Ergebnis (relevante Daten)” [Result (relevant data)].

Please note: The comparison performed has not made any sensible corrections to your data. As this first example used the ADDRESSFACTORY DIRECT *test server, the results are fictional and are only suitable for demonstrating the use of the interface*.

2.3.2 Access requirements

The following sections describe the requirements for using the ADDRESSFACTORY DIRECT system in the following application scenarios:

- Use of the command line client: You wish to use the ADDRESSFACTORY DIRECT system to perform address comparisons of individual records sporadically and manually.
- Integration into your own Java applications: You wish to use the ADDRESSFACTORY DIRECT system to integrate Deutsche Post Direkt's address cleansing services into your own Java applications. In this way you hope to be able to validate the accuracy of address information, for example, or geocode the addresses that have been entered.
- Integration into your own applications with other programming languages: You wish to use the ADDRESSFACTORY DIRECT system to integrate Deutsche Post Direkt's address cleansing services into your own applications that are not created in the programming language Java.

2.3.2.1 Requirements for using the ADDRESSFACTORY DIRECT command line client

- The system on which you run the command line client must have access to the public Internet on the standard ports for HTTP (80) and HTTPS (443).
- If you use a web proxy to access the public Internet from your network, you will need the host name and port of your web proxy. If your web proxy requires authentication, you will also need the user name and password for the web proxy. You can obtain this information from your network administrator.
- An installation of the Java Runtime Environment (JRE), Version 1.5.0 or later. The Java software must be included in your system path.

  An easy way of checking whether these requirements are met is to enter the command `java -version` in the command line. The command should generate an output that resembles the one below:

```
java version "1.6.0_20"
Java(TM) SE Runtime Environment (build 1.6.0_20-b02)
Java HotSpot(TM) Client VM (build 16.3-b01, mixed mode, sharing)
```

- To carry out comparisons against the real ADDRESSFACTORY DIRECT server, you will need a real user name, a password and a configuration name (see also Basic concepts in the ADDRESSFACTORY DIRECT system). You can obtain all this information from Deutsche Post Direkt.

Please note: The test server implements the same interface as the real ADDRESSFACTORY DIRECT *server, but only returns static changes to the data supplied by you and a number of made-up status keys.*

- A copy of the current version of the ADDRESSFACTORY DIRECT binary distribution is available online to download: http://www.deutschepost.de/dpag?tab=1&skin=lo&check=no&lang=de_DE&xmlFile=link1015574_1024311.

2.3.2.2 Requirements for the integration of the ADDRESSFACTORY DIRECT system into your own Java applications

- The system on which you run your application must have access to the public Internet on the standard ports for HTTP (80) and HTTPS (443).
- If you use a web proxy to access the public Internet from your network, you will need the host name and port of the proxy server. If your web proxy requires authentication, you will also need the user name and password for the web proxy. You can obtain this information from your network administrator.
- An installation of the Java Software Development Kit (JDK), Version 1.5.0 or later. The Java software must be included in your system path.
- We also recommend that you use an integrated Java development environment, such as Eclipse (which is free-of-charge).
- To carry out comparisons against the real ADDRESSFACTORY DIRECT server, you will need a real user name, a password and a configuration name (see also Basic concepts in the ADDRESSFACTORY DIRECT system). You can obtain all this information from Deutsche Post Direkt.

Please note: The test server implements the same interface as the real ADDRESSFACTORY DIRECT *server, but only returns static changes to the data supplied by you and a number of made-up status keys.*

- We recommend using the current version of the ADDRESSFACTORY DIRECT source distribution. This software is available online to download: http://www.deutschepost.de/dpag?tab=1&skin=lo&check=no&lang=de_DE&xmlFile=link1015574_1024311.

2.3.2.3 Requirements for the integration of the ADDRESSFACTORY DIRECT system in systems with other programming languages

- Access by the system on which you run your application to the public Internet on the standard ports for HTTP (80) and HTTPS (443).
- If you use a web proxy to access the public Internet from your network, you will need the host name and port of the proxy server. If your web proxy requires authentication, you will also need the user name and password for the web proxy. You can obtain this information from your network administrator.
- The tools required in your programming environment to generate web service stubs from WSDL (Web Service Description Language) files.
- The tools required in your programming environment to translate and link programs.
- To carry out comparisons against the real ADDRESSFACTORY DIRECT server, you will need a real user name, a password and a configuration name (see also Basic concepts in the ADDRESSFACTORY DIRECT system). You can obtain all this information from Deutsche Post Direkt.

Please note: The test server implements the same interface as the real ADDRESSFACTORY DIRECT *server, but only returns static changes to the data supplied by you and a number of made-up status keys.*

- We recommend using the current version of the ADDRESSFACTORY DIRECT source distribution as a reference. Although the examples contained therein are written in the programming language Java, they still provide a starting point for your programs in other programming languages. This software is available online to download: http://www.deutschepost.de/dpag?tab=1&skin=lo&check=no&lang=de_DE&xmlFile=link1015574_1024311

2.3.3 The ADDRESSFACTORY DIRECT distributions

Deutsche Post Direkt provides two distributions (as they are known) for integrating ADDRESSFACTORY DIRECT into your applications. These distributions contain examples, documentation and libraries that should make it easier for you to integrate ADDRESSFACTORY DIRECT into your own systems.

2.3.3.1 ADDRESSFACTORY DIRECT binary distribution

The ADDRESSFACTORY DIRECT binary distribution is primarily aimed at people who

- want to quickly get an initial impression of the setup of ADDRESSFACTORY DIRECT and comparisons using this system,
- need a compact binary distribution in order to use ADDRESSFACTORY DIRECT, including all third-party dependencies, in their own Java programs.

The distribution archive `af-direct-jaxws-client-<VERSION>-binary.zip` contains the following files:

File	Description
`README.txt`	Briefly describes the structure and use of the distribution.
`startclient.bat`	Script to run the ADDRESSFACTORY DIRECT command line client on Windows systems.
`startclient.sh`	Script to run the ADDRESSFACTORY DIRECT command line client on UNIX-type systems.
`AF3DirectTestClient.properties.template`	Template for ADDRESSFACTORY DIRECT configuration files. Typically the user creates a copy in the directory of the distribution or in the class path with the name AF3DirectTestClient.properties, and customizes the settings contained in the file using a text editor.
`af-direct-jaxws-client.jar`	Binary Java library that contains the web service stubs – the local representation – of the ADDRESSFACTORY DIRECT web service.
`lib/*.jar`	Directory with third-party dependencies of the web service stub and the command line client.

2.3.3.2 ADDRESSFACTORY DIRECT source distribution

The ADDRESSFACTORY DIRECT source distribution is primarily aimed at people who

- want to gain a deep insight into the setup of ADDRESSFACTORY DIRECT and comparisons using this system
- want to translate the binary distribution themselves
- need a completed Eclipse project for the integration into their development environment.

The distribution archive `af-direct-jaxws-client-<VERSION>-sources.zip` contains the following files:

File	Description
`README.txt`	Briefly describes the structure and use of the distribution.
`Versionen.txt`	Contains information on the version history of the ADDRESSFACTORY DIRECT distributions.
`startclient.bat.template`	Template for the script to run the ADDRESSFACTORY DIRECT command line client on Windows systems. The build process generates the actual script from this.
`startclient.sh.template`	Template for the script to run the ADDRESSFACTORY DIRECT command line client on UNIX-type systems. The build process generates the actual script from this.
`AF3DirectTestClient.properties.template`	Template for ADDRESSFACTORY DIRECT configuration files. Typically the user creates a copy in the directory of the distribution or in the class path with the name AF3DirectTestClient.properties, and customizes the settings contained in the file using a text editor.
`src/**`	Contains the source text of the ADDRESSFACTORY DIRECT command line client and the ADDRESSFACTORY DIRECT web service stubs.
`lib/**`	Directory with third-party dependencies of the web service stub and the command line client, and license information on the third-party dependencies of the distribution.
`build.xml`	Ant build file for creating binaries from the sources of the source distribution.
`build.bat, build.sh`	Shell scripts for calling the build.xml Ant scripts from the command line of a Windows system or a UNIX-type system.
`build.properties, version.properties`	Contains settings for the build scripts.
`.classpath, .project, .settings, dist, _nosvn_`	Files and directories that are needed to integrate the distribution into the Eclipse development environment as a project and run the build scripts.
`postdirekt-af-direct-jaxws-client.spec`	SPEC file to create an RPM package from the distribution.

2.3.4 Customizing the AF3DirectTestClient.properties file

The `AF3DirectTestClient.properties` file contains all the settings that the command line client needs to connect to the ADDRESSFACTORY DIRECT server. You can customize the following settings there.

> *Please note: This customization is only necessary if you are using the* ADDRESSFACTORY DIRECT *command line client, or if you are copying across the configuration file mechanism from our examples to your own application. If you are programming directly with* ADDRESSFACTORY DIRECT*, you should copy across the specified settings from part of your application.*

Setting	Meaning
`username`	Your user name for the ADDRESSFACTORY DIRECT system. You can obtain this value from Deutsche Post Direkt.
`password`	Your password for the ADDRESSFACTORY DIRECT system. You can obtain this value from Deutsche Post Direkt.
`mandant`	As an option, a cooperation partner can use the user name of a client saved in the online services.
`configuration`	The name of the configuration that is to be used for your comparison. You can obtain this value from Deutsche Post Direkt. *Please note: When using the test server, this value can be left blank.*
`proxyHost` `proxyPort`	If you use a web proxy to access the public Internet from your network, enter the host name and port of your web proxy here. You can obtain these values from your network administrator. If you have direct access to the public Internet from the computer that is to access the ADDRESSFACTORY DIRECT system, leave these two entries blank.
`proxyProtocol`	If you use a web proxy to access the public Internet from your network, enter the protocol (http/https) that you use to access the web proxy. You can obtain this value from your network administrator. If you have direct access to the public Internet from the computer that is to access the ADDRESSFACTORY DIRECT system, leave this entry blank.
`proxyUsername` `proxyPassword`	If you use a web proxy to access the public Internet from your network and if your web proxy requires authentication from you, enter your user name and password for the web proxy here. You can obtain these values from your network administrator.

	Please note: These are not the user name and password for the ADDRESSFACTORY DIRECT *system.* If you have direct access to the public Internet from the computer that is to access the ADDRESSFACTORY DIRECT system or if your web proxy does not require any authentication, leave these two entries blank.

`wsdlRemote`
`serviceName`
	Use these two settings to switch between the real ADDRESSFACTORY DIRECT server and the test server. The values are always issued in pairs:
	For the real ADDRESSFACTORY DIRECT server, use:
	
	`wsdlRemote=https://portal.postdirekt.de/AF-Direct/AF-Direct-Service/wsdl`
	`serviceName=AF-Direct-Service`
	
	For the test server use:
	
	`wsdlRemote=https://portal.postdirekt.de/AF-Direct/AF-Direct-TestServer/wsdl`
	`serviceName=AF-Direct-TestServer`

`username`	Your user name for the ADDRESSFACTORY DIRECT system. You can obtain this value from Deutsche Post Direkt.
`password`	Your password for the ADDRESSFACTORY DIRECT system. You can obtain this value from Deutsche Post Direkt.
`configuration`	The name of the configuration that is to be used for your comparison. You can obtain this value from Deutsche Post Direkt. *Please note: When using the test server, this value can be left blank.*
`proxyHost` `proxyPort`	If you use a web proxy to access the public Internet from your network, enter the host name and port of your web proxy here. You can obtain these values from your network administrator. If you have direct access to the public Internet from the computer that is to access the ADDRESSFACTORY DIRECT system, leave these two entries blank.

`proxyProtocol`	If you use a web proxy to access the public Internet from your network, enter the protocol (http/https) that you use to access the web proxy. You can obtain this value from your network administrator. If you have direct access to the public Internet from the computer that is to access the ADDRESSFACTORY DIRECT system, leave this entry blank.
`proxyUsername` `proxyPassword`	If you use a web proxy to access the public Internet from your network and if your web proxy requires authentication from you, enter your user name and password for the web proxy here. You can obtain these values from your network administrator. *Please note: These are not the user name and password for the* ADDRESSFACTORY DIRECT *system.* If you have direct access to the public Internet from the computer that is to access the ADDRESSFACTORY DIRECT system or if your web proxy does not require any authentication, leave these two entries blank.

`wsdlRemote`
`serviceName`
	Use these two settings to switch between the real ADDRESSFACTORY DIRECT server and the test server. The values are always issued in pairs:
	For the real ADDRESSFACTORY DIRECT server, use:
	`wsdlRemote=https://portal.postdirekt.de/AF-Direct/AF-Direct-Service/wsdl`
	`serviceName=AF-Direct-Service`
	For the test server use:
	`wsdlRemote=https://portal.postdirekt.de/AF-Direct/AF-Direct-TestServer/wsdl`
	`serviceName=AF-Direct-TestServer`

2.3.5 Basic concepts in the ADDRESSFACTORY DIRECT system

2.3.5.1 Real ADDRESSFACTORY DIRECT server vs. test server

Deutsche Post Direkt provides you with two implementations of the ADDRESSFACTORY DIRECT interface:

- The ADDRESSFACTORY DIRECT **test server** is provided by Deutsche Post Direkt for non-binding integration tests. It provides an implementation of the same interface that the real ADDRESSFACTORY DIRECT server also implements. However, the test server only returns static changes to the data supplied by you and made-up status keys. At any time during the implementation, there is the option of contacting the real ADDRESSFACTORY DIRECT server instead of the test server through a simple configuration change. Queries that you submit to the test server are always free of charge.
- The **real** ADDRESSFACTORY DIRECT **server** performs a set of configured comparison services on an inquiry and provides the result in the form of corrected data and a series of status keys describing the work that has been carried out.

2.3.5.2 Access data for ADDRESSFACTORY DIRECT

You require the following access data, which you will receive from Deutsche Post Direkt, in order to access the real ADDRESSFACTORY DIRECT server:

- You identify yourself in the ADDRESSFACTORY DIRECT system using a personal **user name** and a corresponding **password**.
- The name of one or more **configurations**. You use this to indicate the work that needs to be carried out on an input record (see below).

2.3.5.3 Configurations

In the ADDRESSFACTORY system, a configuration is a known set of comparison settings and definitions relating to input and output files that is assigned to you by Deutsche Post Direkt. In ADDRESSFACTORY DIRECT, a configuration is a mandatory requirement for your comparison as it is not possible for the user to define the comparison settings here.

You develop the configurations required in consultation with your contact at Deutsche Post Direkt, who will then let you know the name(s) of the configurations developed in this way.

Example: A Deutsche Post Direkt employee has assigned you a configuration under the name "bac_fnc_pdc". This indicates that records will be processed using the BasicAddressCheck, FormalNameCheck and PremiumDeliveryCheck modules (with detailed settings). Enter these settings when you start an ADDRESSFACTORY DIRECT session in order to process all the subsequent inquiries with this configuration:

```
sessionId = afd.openSession("bac_fnc_pdc");
```

In the command line client too there is the option of performing real comparisons using this configuration. To do this, edit the following line in your `AF3DirectTestClient.properties` *file:*

```
configuration=<Name Ihrer Konfiguration>
```

and then restart the command line client.

Please note: When using the ADDRESSFACTORY DIRECT test server, the configuration specified is ignored. *Thus you can specify any configuration name here, without first having had a configuration assigned to you by Deutsche Post Direkt. As only static changes are made to your data, there is no need for a "real" configuration.*

2.3.6 Installation of the binary distribution

The easiest way of using ADDRESSFACTORY DIRECT involves using the command line client supplied with it, which is part of the ADDRESSFACTORY DIRECT binary distribution.

Please note: For the following steps, you will need an installation of the Java Runtime Environment (JRE), Version 1.5.0 or later. The Java software must be included in your system path. An easy way of checking whether these requirements are met is to enter the command `java -version` in the command line. *The command should generate an output that resembles the one below:*

```
java version "1.6.0_20"
Java(TM) SE Runtime Environment (build 1.6.0_20-b02)
Java HotSpot(TM) Client VM (build 16.3-b01, mixed mode, sharing)
```

You can find detailed information on the access requirements of the ADDRESSFACTORY DIRECT system under Access requirements.

2.3.6.1 Installation of the distribution

- Unpack the binary distribution provided by Deutsche Post Direkt `af-direct-jaxws-client-<VERSION>-binary.zip`. In the section below, we assume that you have unpacked the distribution to the directory `C:\af-direct` on a Windows system.
- Open the directory `C:\af-direct` and copy the file `AF3DirectTestClient.properties.template`. Name the copy `AF3DirectTestClient.properties`.
- Customize the copy `AF3DirectTestClient.properties` based on the information in Customizing the AF3DirectTestClient.properties file.

2.3.6.2 Starting the command line client

Start the command line client of the ADDRESSFACTORY DIRECT system. On a Windows system, double-click on the script `startclient.bat`.

2.3.6.3 Integration into your own projects

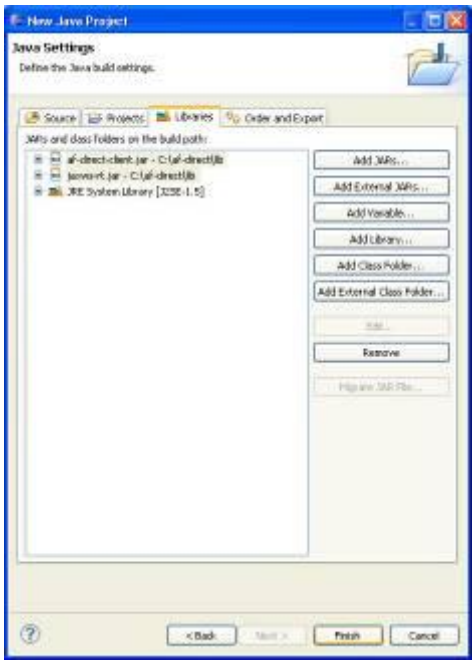
With the binary distribution, it is possible to access the ADDRESSFACTORY DIRECT system from your own programs. The following steps show you how to prepare a new Java project in the Eclipse development environment.

Tip: Instead of starting with the binary distribution, start with the source distribution and customize the ADDRESSFACTORY DIRECT *command line client according to your own requirements.*

- First create a new Java project.

New Java Project
Create a Java Project
Create a Java project in the workspace or in an external location.
Project name: af-direct-demo
Contents
Create new project in workspace
Create project from existing source
JRE
Use an execution environment JRE:
Use a project specific JRE:
Use default JRE (currently 'jdk1.6')
Configure JREs...
Project layout
Use project folder as root for sources and class files
Create separate folders for sources and class files
Configure default...
Working sets
Add project to working sets
Next >
Finish
Cancel

- Add the files `lib/af-direct-client.jar` and `jaxws-rt.jar` to the class path of your project. You can now use the ADDRESSFACTORY DIRECT system from the new project.



2.3.7 Installation of the source distribution

THE SOURCE DISTRIBUTION IS IDEAL FOR PEOPLE WHO WISH TO EMBED THE ADDRESSFACTORY DIRECT system in their own Java applications.

Please note: For the following steps, you will need and installation of the Java Software Development Kit (JDK) that is Version 1.5.0 or later. You should generally use a Java development environment, such as Eclipse (which is free-of-charge).

You can find detailed information on the access requirements of the ADDRESSFACTORY DIRECT system under Access requirements.

2.3.7.1 Installation of the distribution

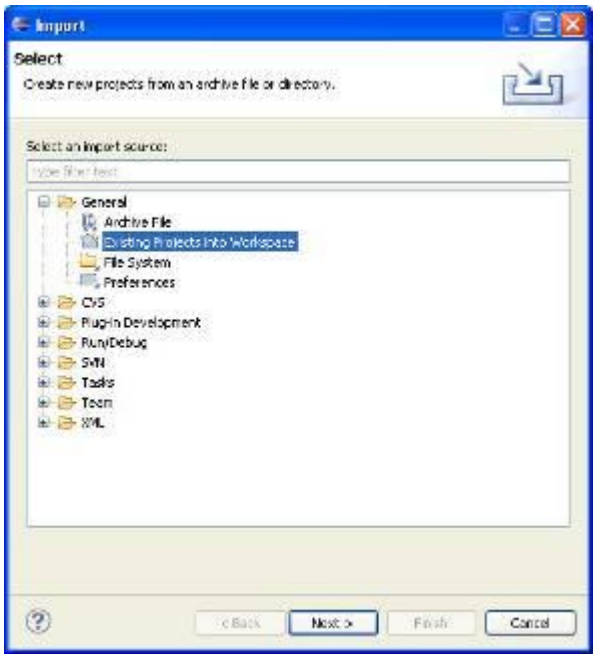
- Unpack the source distribution provided by Deutsche Post Direkt `af-direct-jaxws-client-<VERSION>-sources.zip`. In the section below, we assume that you have unpacked the distribution to the directory `C:\af-direct-source` on a Windows system.
- Open the directory `C:\af-direct-source` and copy the file `AF3DirectTestClient.properties.template` to the directory `C:\af-direct-source\src`. Name the copy `AF3DirectTestClient.properties`.
- Customize the copy `src\AF3DirectTestClient.properties` based on the information in Customizing the AF3DirectTestClient.properties file.

2.3.7.2 Integration into the Eclipse development environment

- Open the project in your development environment. You can do this by right-clicking in the Package Explorer within Eclipse, for example, and selecting “Import ...”. Alternatively, the import function can also be accessed via the “File” menu.

Please note: The source distribution is prepared for direct use in the Eclipse development environment. If you wish to use it in other development environments, please consult the manual for your development environment.

- In the dialog window that appears, select the option “General > Existing Projects into Workspace”



- Then select the directory to which you have unpacked the source distribution (in this case: `C:\af-direct-source`). In the directory, the system detects a project with the name `af-direct-jaxws-client`.

Following the import, you can run the ADDRESSFACTORY DIRECT command line client on the `class de.postdirekt.af3.direct.jaxwsclient.AF3DirectTestClient` via the function “Run as Java application”.

2.3.8 Programming with ADDRESSFACTORY DIRECT

The open-source command line client demonstrates a large number of useful procedures with regard to the use of the ADDRESSFACTORY DIRECT system. WE RECOMMEND THAT YOU USE THE COMMAND LINE CLIENT AS A GUIDE WHEN YOU INTEGRATE ADDRESSFACTORY DIRECT into your own programs for the first time.

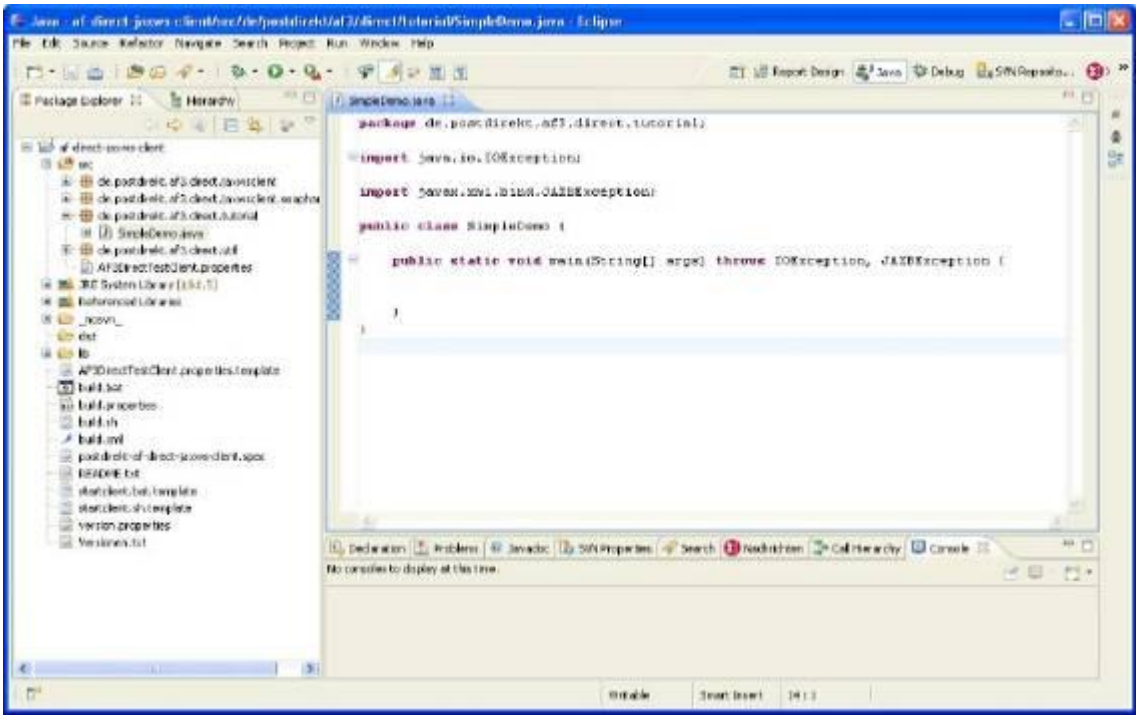
This section develops a minimalist example for accessing ADDRESSFACTORY DIRECT from scratch. The example goes into a few important basic conditions for using the ADDRESSFACTORY DIRECT system in detail.

2.3.8.1 Conditions

We assume that you have successfully completed the Installation of the source distribution and have successfully translated and run the command line client from its sources.

2.3.8.2 Programming of a new command line application

Create a new class in the af-direct-jaxws-client project of the source distribution with the name `de.postdirekt.af3.direct.tutorial.SimpleDemo`. Add an empty `main` method to it.



Insert the following code in order to obtain a local representation of the ADDRESSFACTORY DIRECT service (stub). The stub `afd` acts as a local substitute for the ADDRESSFACTORY DIRECT web service. The entries `AF-Direct-Service` and `https://...AF-Direct-service/wsdl` relate to the real web service. The README file and the section Customizing the AF3DirectTestClient.properties file contain the necessary values for the Direct test server. The user name (`directuser`) and password (`DirectPass`) will have different values in your code.

```
QName portName = new QName(
"http://service.v_1_1.direct.af.postdirekt.de/",
"AF-Direct-Service");

AFDirectService afDirectService = new AFDirectService(
 new URL("https://portal.postdirekt.de/"+
     "AF-Direct/AF-Direct-Service/wsdl"), portName);

afDirectService.setHandlerResolver(
 new HeaderHandlerResolver("directuser", "DirectPass"));

AFDirect afd = afDirectService.getAFDirectPort();
```

Insert the following code in order to generate a single input record. This contains the data that you would like to have corrected by Deutsche Post Direkt. You can find further details on generating input records under Defining the most frequently used input data.

```
SimpleInRecordWSTypeinRecord = new SimpleInRecordWSType();
inRecord.setRecordId(1);
inRecord.setName("Mustermann");
inRecord.setVorname("Hans");
inRecord.setPlz("53112");
inRecord.setOrt("Bonn");
inRecord.setStrasse("Strässchensweg");
inRecord.setHausnummer("10");
```

Insert the following code in order to have the input record generated in this way compared. The result of the comparison is contained in the variable `outRecord`.

```
OutRecordWSType outRecord = afd.processSimpleData(sessionId, inRecord);
```

The arguments which can be transferred are listed below.

sessionId	
configName	Name of the configuration. You can obtain the name of the configuration from Deutsche Post Direkt. The name of the configuration (bac_fnc_pdc) will probably have a different value in your code.
mandantId	As an option, the mandantId parameter can be used to specify for which clients the comparison is to take place. You can obtain the mandantId from Deutsche Post Direkt GmbH. The value “Null” means it is not set.
inRecord	The input record to be compared

Insert the following code in order to display the most important results of the comparison.

Note: You can find a complete list of all the classes that make up the local representation of the ADDRESSFACTORY DIRECT *web service (stub) in the source distribution under* `lib\PostDirekt\af-direct-client-javadoc.zip`*. The way in which the data fields are arranged in the following types:* `InRecord` *and* `OutRecord` *is particularly apparent here.*

```
System.out.println("Vorname=" + outRecord.getNameItem().getVorname());
System.out.println("Name=" + outRecord.getNameItem().getName());
System.out.println("Strasse=" +
outRecord.getAdrItem().getHausanschrift().getStrasse().getValue());
System.out.println("Hausnummer=" +
outRecord.getAdrItem().getHausanschrift().getHausnr());
System.out.println("HausnummerZusatz=" +
outRecord.getAdrItem().getHausanschrift().getHausnrZusatz());
System.out.println("PLZ=" +
outRecord.getAdrItem().getHausanschrift().getPlz());
System.out.println("Ort=" +
outRecord.getAdrItem().getHausanschrift().getOrt().getValue());
```

Where applicable, insert the following code in order to display the status keys that were generated as a result of the comparison. To interpret the status keys, see also: Introduction to the ADDRESSFACTORY key system. The status keys are grouped according the module they were generated by.

```
List<ModuleCodesType> moduleCodes =
 outRecord.getStatusItem().getPDStatusCodeItem().getModuleCodes();

for (ModuleCodesType moduleCode : moduleCodes) {
 List<String> statusCodes = moduleCode.getStatusCode();
 String scodes = "";
 for (int i = 0; i < statusCodes.size(); i++) {
  scodes += statusCodes.get(i) + (i < statusCodes.size() - 1 ? ", " : "");
 }
 System.out.println("Modul: " + moduleCode.getName() + ", StatusCodes: " +
scodes);
}
```

2.3.9 Defining the most frequently used input data

The following section describes the generation of objects that represent your input data to the ADDRESSFACTORY DIRECT web service. You have three main options here:

- Construct an object of the type `SimpleInRecordWSType` if you wish to generate an input record with the most popular fields (e.g. surname and street address).
- Construct an object of the type `InRecordWSType` if you wish to generate an input record with “exotic” fields and a lot of detailed postal information (e.g. noble title, PO box address, Packstation number or bulk mail recipients’ postal codes).
- Construct an object of the type `InRecordWSType` if you wish to read the data from an XML file in `AFInData` format.

Note: You can find a complete list of all the classes that make up the local representation of the ADDRESSFACTORY DIRECT *web service (stub) in the source distribution under* `lib\PostDirekt\af-direct-client-javadoc.zip`*. The way in which the data fields are arranged in the following types:* `InRecord` *and* `OutRecord` *is particularly apparent here.*

2.3.9.1 Using SimpleInRecordWSType

The `SimpleInRecordWSTyp` enables you to easily construct an object for your input record. It is not necessary here to know or use the full hierarchical structure of the input data format of ADDRESSFACTORY DIRECT. Instead, you should use a flat notation such as the following:

```
SimpleInRecordWSType inRecord = new SimpleInRecordWSType();
inRecord.setRecordId(recordId);
inRecord.setName("Mustermann");
inRecord.setVorname("Hans");
inRecord.setPlz("53112");
...
```

However, the `SimpleInRecordWSType` only supports the following frequently used fields:

Field	Description
`int recordId`	Numerical ID of the record. This entry must be unique within the current session.
`java.lang.String vorname`	
`java.lang.String name`	
`java.lang.String strasse`	
`java.lang.String hausnummer`	Can also contain house number suffixes in the input direction. Please note: The ADDRESSFACTORY system detects and separates house number suffixes. The `hausnummer` [house number] field only contains the numeric part of the house number after the comparison. The house number suffix is output as a separate field.
`java.lang.String plz`	
`java.lang.String ort`	Can also contain town/city suffixes in the input direction. Please note: The ADDRESSFACTORY system detects and separates town/city suffixes. The `ort` [town/city] field only contains the town/city name after the comparison. The town/city suffix is output as a separate field.
`java.lang.String anfragegrund`	Inquiry reason for personal credit rating inquiries. Only required if the configuration used by you contains personal credit rating inquiries. For a list of possible inquiry reasons, please see Requesting personal credit rating information.
`javax.xml.datatype.XMLGregorianCalendar geburtsdatum`	Date of birth for personal credit rating inquiries. Only required if the configuration used by you contains personal credit rating inquiries.

2.3.9.2 Using InRecordWSType

Objects of the type `InRecordWSType` enable the construction of input records that contain the full level of detail supported by the ADDRESSFACTORY system. The type model behind the class `InRecordWSType` is considerably more complex than the flat model of the `SimpleInRecordWSType` and is therefore also more complex in construction. However, the use of the `InRecordWSType` is recommended for advanced applications.

A simple example of the use of the `InRecordWSType` may appear as follows:

```
InRecordWSType inRecord = new InRecordWSType();
inRecord.setRecordId(recordId);

NameItemType nameItemType = new NameItemType();
inRecord.setNameItem(nameItemType);
nameItemType.setName("Mustermann");
nameItemType.setVorname("Hans");

AdrItemType adrItemType = new AdrItemType();
HausanschriftType hausanschriftType = new HausanschriftType();
StrasseType strasseType = new StrasseType();
OrtType ortType = new OrtType();

inRecord.setAdrItem(adrItemType);
adrItemType.setHausanschrift(hausanschriftType);
hausanschriftType.setOrt(ortType);
hausanschriftType.setStrasse(strasseType);

hausanschriftType.setPlz("53112");
ortType.setValue("Bonn");
strasseType.setValue("Strässchensweg");
hausanschriftType.setHausnr("10");
```

Unlike the `SimpleInRecordWSType`, the whole object hierarchy must be constructed manually:

- an `InRecord` contains a `NameItem` and an `AdrItem`,
- an `AdrItem` contains a street address and
- a street address contains a street and a town/city.

2.3.9.3 Using InRecordWSType with XML data

As an alternative to the manual construction of `InRecordWSType` objects, these objects can also be constructed from XML data. The built-in (un-)marshaling abilities of the JAXB framework make this process particularly easy. For an XML file such as this one:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<InRecordType recordId="1"
xmlns:ns2="http://www.postdirekt.de/schema/af/data/v_1_1">
  <ns2:NameItem>
  <ns2:Vorname>Hans</ns2:Vorname>
    <ns2:Name>Mustermann</ns2:Name>
  </ns2:NameItem>
  <ns2:AdrItem>
    <ns2:Hausanschrift>
      <ns2:Strasse>Strässchensweg</ns2:Strasse>
      <ns2:Hausnr>10</ns2:Hausnr>
      <ns2:Plz>53112</ns2:Plz>
      <ns2:Ort>Bonn</ns2:Ort>
    </ns2:Hausanschrift>
  </ns2:AdrItem>
</InRecordType>
```

the following code fragment is sufficient to convert it into an `InRecordWSType` object.

```
JAXBContext jc = JAXBContext.newInstance(InRecordWSType.class);
Unmarshaller um = jc.createUnmarshaller();
JAXBElement<InRecordWSType> root =
 um.unmarshal(new StreamSource(new File(filePath)), InRecordWSType.class);
return root.getValue();
```

2.3.10 Reading the most frequently used output data

As with the `InRecordWSType` for the input, objects of the `OutRecordWSType` represent output data from the ADDRESSFACTORY DIRECT web services.

In fact, the `InRecordWSType` and `OutRecordWSType` objects are largely identical as far as their structure is concerned. The main difference can be seen in fields for status keys describing the work that the ADDRESSFACTORY system has carried out on your data. The techniques described here for extracting result data are therefore directly comparable with the details given in the section Defining the most frequently used input data. We describe:

- direct access to the fields of the `OutRecordWSType`, and
- the conversion of an `OutRecordWSType` object into a corresponding XML fragment.

Note: You can find a complete list of all the classes that make up the local representation of the ADDRESSFACTORY DIRECT *web service (stub) in the source distribution under* `lib\PostDirekt\af-direct-client-javadoc.zip`*. The way in which the data fields are arranged in the following types:* `InRecord` *and* `OutRecord` *is particularly apparent here.*

2.3.10.1 Direct access to OutRecordWSType fields

Direct access to `OutRecordWSType` fields is directly comparable with the definition of `InRecordWSType` objects (see Defining the most frequently used input data). Here too, the user must navigate to the relevant place in the object model and read out the values that he is interested in. An example with the data that is most frequently required may appear as follows:

```
System.out.println("Vorname=" + outRecord.getNameItem().getVorname());
System.out.println("Name=" + outRecord.getNameItem().getName());
System.out.println("Strasse=" +
outRecord.getAdrItem().getHausanschrift().getStrasse().getValue());
System.out.println("Hausnummer=" +
outRecord.getAdrItem().getHausanschrift().getHausnr());
System.out.println("HausnummerZusatz=" +
outRecord.getAdrItem().getHausanschrift().getHausnrZusatz());
System.out.println("PLZ=" +
outRecord.getAdrItem().getHausanschrift().getPlz());
System.out.println("Ort=" +
outRecord.getAdrItem().getHausanschrift().getOrt().getValue());
```

In addition to the corrected data, an `OutRecordWSType` object also contains status keys that describe the work carried out on your data. The status keys (see also Introduction to the ADDRESSFACTORY key system to interpret them) are listed as follows, grouped according to modules:

```
List<ModuleCodesType> moduleCodes =
outRecord.getStatusItem().getPDStatusCodeItem().getModuleCodes();
for (ModuleCodesType moduleCode : moduleCodes) {
 List<String> statusCodes = moduleCode.getStatusCode();
 String scodes = "";
 for (int i = 0; i < statusCodes.size(); i++) {
  scodes += statusCodes.get(i) + (i < statusCodes.size() - 1 ? ", " : "");
 }
 System.out.println("Modul: " + moduleCode.getName() + ", StatusCodes: " +
scodes);
}
```

Finally, in some cases it may also be helpful to use extended fields. These are simple pairs of keys and values that are used for two use cases:

- First, with extended fields there is the option of “pushing” values through the comparison that are not to be interpreted or changed. This use case primarily occurs in the other ADDRESSFACTORY product variants.
- On the other hand, with extended fields there is the option of returning values from the comparison which are not part of the main scope of the ADDRESSFACTORY and which therefore do not have an explicit representation in the system’s data model. Key examples of this application are credit rating inquiries, which deliver their output in extended fields.

Extended fields can be easily enumerated – in the same way as status keys.

```
ExtFieldItemType extFieldItem = outRecord.getExtFieldItem();
if (extFieldItem != null) {
 List<ExtFieldType> extFields = extFieldItem.getExtField();
 for (ExtFieldType extField : extFields) {
  System.out.println("ExtField \"" + extField.getName() + "\": " +
extField.getValue());
 }
}
```

2.3.10.2 Short spellings and long spellings

In some cases, the ADDRESSFACTORY DIRECT system provides separate short and long spellings of streets and towns/cities (for details see also BasicAddressCheck (BAC)). The alternative spelling can be called up as follows. Here the check for potential NULL values is omitted in the example.

```
// Langschreibweise der Straße der Hausanschrift
outRecord.getAdrItem().getHausanschrift().getStrasse().getValue();
// Kurzschreibweise der Straße der Hausanschrift
outRecord.getAdrItem().getHausanschrift().getStrasse().getKurz();

// Langschreibweise des Ortes der Hausanschrift
outRecord.getAdrItem().getHausanschrift().getOrt().getValue();
// Kurzschreibweise des Ortes der Hausanschrift
outRecord.getAdrItem().getHausanschrift().getOrt().getKurz();
```

2.3.10.3 Converting OutRecordWSType objects into XML fragments

Particularly when working with the ADDRESSFACTORY DIRECT system for the first time, the conversion of `OutRecordWSType` objects into XML fragments is a useful diagnostic tool for being able to identify which fields the ADDRESSFACTORY system populates in its output. This conversion is easy to carry out with the JAXB framework.

```
JAXBContext outContext = JAXBContext.newInstance(OutRecordWSType.class);
Marshaller marshaller = outContext.createMarshaller();
StringWriter sWriter = new StringWriter();
marshaller.setProperty(Marshaller.JAXB_FORMATTED_OUTPUT, Boolean.TRUE);
marshaller.marshal(new JAXBElement<OutRecordWSType>(
 new QName("", "OutRecordType"), OutRecordWSType.class,out), sWriter);
s = sWriter.toString();
```

2.3.11 Requesting personal credit rating information

A key application of the ADDRESSFACTORY DIRECT system is finding out personal credit rating information in cooperation with our partner, InFoScore Consumer Data GmbH (ICD).

As this credit rating information does not form part of the core functionality of the ADDRESSFACTORY system, Deutsche Post Direkt provides you with the associated data in extended fields and in an uninterpreted form (see also Reading the most frequently used output data). The following section contains the most important reference information for interpreting these return values.

2.3.11.1 Conventions in input and output

In addition to a correct postal address and name information, each inquiry requesting personal credit rating information must contain at least one inquiry reason and should contain a date of birth. The section Defining the most frequently used input data illustrates the definition of these values using the SimpleInRecordWSType. Alternatively, you can transfer the values via the extended fields _AF_ICD_Anfragegrund and _AF_ICD_Geburtsdatum (Format: YYYYMMDD, e.g. 19800130). By specifying an inquiry reason, you state the grounds for your legitimate interest in the requested information. The following inquiry reasons are permitted:

Inquiry reason*	**Meaning**
ABK	Anfrage Bonitätsprüfung Kauf [Request for credit check – purchase]
ABV	Anfrage Bonitätsprüfung Versicherungsvertrag [Request for credit check – insurance contract]
ABB	Anfrage Bonitätsprüfung eines frei- oder nebenberuflichen Versicherungsvertreters/Bewerbers [Request for credit check of a self-employed or part-time insurance agent/applicant]
ABI	Anfrage Bonitätsprüfung Inkasso [Request for credit check – debt collection]
ABM	Anfrage Bonitätsprüfung Mobilfunk [Request for credit check – mobile communications]

* As part of spot checks you may also be asked to provide further explanations for the inquiries.

In addition to the identification of the work carried out, result records then also contain other information on the credit rating if the inquiry has resulted in a hit at ICD. Deutsche Post Direkt forwards the results of the ICD inquiry to you in extended fields. The following extended fields may potentially be populated:

Extended field	**Contents**
_AF_ICD_TrefferKz	Treffer-Kennzeichen [Hit flag]
_AF_ICD_MerkmalKz	Merkmals-Kennzeichen [Attribute flag]
_AF_ICD_MerkmalDatum	Attribute date (format: YYYYMMDD)
_AF_ICD_MerkmalAktenzeichen	Aktenzeichen des negativen Merkmals [Reference number of the negative attribute]
_AF_ICD_MerkmalErlDatum	Merkmals-Erledigungs-Datum im Format: JJJJMMTT [Attribute completion date in the format: YYYYMMDD]
_AF_ICD_Kennung	Your user ID in the ADDRESSFACTORY system. The system automatically adds this value in the input direction and transfers you to InFoScore Consumer Data GmbH. In the output direction, the value is always returned to you but does not require any further interpretation.

The tables below provide you with more detailed information for interpreting the values contained in these fields.

2.3.11.2 Reference for hit flag

Hit flag	Meaning
0	No negative information available for the inquiry (does not mean that this individual is not present in the database!)
1	100% Treffer [100% hit] 100% hit, that is, the person is known at the address given in the arvato infoscore databases and at least one attribute is assigned. A 100% hit does not mean that the inquiry data was 100% verified but that ICD is certain that the individual found is the individual forming the subject of the inquiry – changes may be made to the inquiry data in the course of the check – and that negative information is known
2	Ähnlicher Treffer wurde ermittelt/ Meldung unter Vorbehalt [Similar hit found/ Report subject to proviso] No match could be found for the person sought. However, there are attributes for a similar person, who demonstrates the corresponding number and hardness of attributes.
5	Hinweis zur Adresse [Reference to address] Information on the address: The address given is a risk address References to the address indicate dwellings with frequently changing occupants and known negative payment behavior. This includes jails, hostels for the socially disadvantaged (“Berber accommodation”), etc.
8	nicht prüfbare Anfrage [Cannot be checked] This includes addresses that either demonstrate structural errors in the inquiry (e.g. no data in “mandatory fields”), or have incorrect data or data that cannot be unequivocally allocated in the address fields.
9	kein berechtigtes Interesse [No legitimate interest] According to Section 29(2) sentence 1a of the Federal Data Protection Act (BDSG), a legitimate interest in the receipt of the information must have already been demonstrated to the satisfaction of the issuer of the information by the recipient of the information in the inquiry. For this, InFoScore generally agrees a code with its subscribers that indicates this reason in an abbreviated form. If this is not communicated or is communicated incorrectly, no credit rating check can be carried out.
12	Business-Sperre [Business block] The business block prevents subscribers who are only activated for consumer inquiries from processing business-to-business inquiries via the consumer database. The consumer inquiry logic is not designed for inquiries of this type. If ICD classes information in the inquiry as business to business inquiries, please check the inquiry string.

2.3.11.3 Reference for attribute flag

Please note: This translation is for your convenience. Only the original German Version of this is legally binding.

Criteria	Description
I. Extrajudicial features (reminders sent by creditors and data from collection processes) ("soft criteria")	
GM	Gläubigermahnung [reminder sent by creditor]
IA	Inkasso-Mahnverfahren eingeleitet [initiation of collection process]
AM	Fortlauf des außergerichtl. Inkasso-Mahnverfahrens nach Teil- bzw. bei Ratenzahlung [continuation of extrajudicial collection procedure after partial payment or payment installments]
IE	Einstellung des außergerichtlichen Inkasso-Mahnverfahrens wegen Aussichtslosigkeit [dismissal of extrajudicial collection procedure due to futility]
II. Judicial features (legal proceedings to initiate payment by debtor) ("medium criteria") Criteria	
MB	Antrag auf Mahnbescheid [court ordered payment of debts]
VB	Antrag auf Vollstreckungsbescheid [writ or warrant for the execution of collection processes]
TR	Ratenzahler nach Forderungstitulierung [payment in installments after legal enforcement of claim]
ZWA	Zwangsvollstreckung in das bewegliche Vermögen [levy of execution to liquidate personal assets (non real-estate)]
ZWI	Zwangsvollstreckung in das unbewegliche Vermögen [levy of execution to liquidate personal assets (real-estate)]
FRP	Fruchtlose Pfändung [unproductive levy of execution, futile collections attempt]
LP	Lohn- oder sonstige Forderungspfändung aufgrund eines gerichtlichen Pfändungs- und Überweisungsbeschlusses [garnishment of wages]
UF	Uneinbringliche, titulierte Forderung [non collectable legally binding payment claim]
UBV	Unbekannt verzogen (unter Hinterlassung von Verbindlichkeiten aus Geld- oder Warenkrediten) [relocation leaving no forwarding address (with accounts payable left behind) (no entry at registration office)]
III. Defaulter book and (consumer) insolvency data* ("hard criteria")	
HB*	Haftbefehl zur Erzwingung der eidesstattlichen Versicherung [warrant of arrest to provide a sworn financial statement (Financial Affidavit)]
HV	Vollstreckung des Haftbefehls zur Erzwingung der eidesstattlichen Versicherung [execution of the warrant of arrest to provide a sworn financial statement (Financial Affidavit)]
SVV**	**Verweigerung der Vermögensauskunft gem. § 882c Abs. 1 Nr. 1 ZPO SVV [debtor fails to provide information on his financial status and assets according to § 882c Paragraph 1 No. 1 Code of Civil Procedure (ZPO)]**

EV*	Eidesstattliche Versicherung („Offenbarungseid“) [provision of a sworn financial statement (Financial Affidavit)]
SAV**	**Erkennbare Aussichtslosigkeit der Vollstreckung gem. § 882c Abs. 1 Nr. 2 ZPO SAV [debtor is obviously not qualified for the execution of collection processes according to according to § 882c Paragraph 1 No. 2 Code of Civil Procedure (ZPO)]**
SNZ**	**Nichtzahler gem. § 882c Abs. 1 Nr. 3 ZPO SNZ [debtor fails to pay according to § 882c Paragraph 1 No. 3 Code of Civil Procedure (ZPO)]**
EEV	Ergänzung der eidesstattlichen Versicherung [amendment to a sworn financial statement (Financial Affidavit)]
WEV	wiederholte eidesstattliche Versicherung (§ 903 ZPO) [repeated provision of a sworn financial statement (Financial Affidavit) (Section 903 of the German Code of Civil Procedure ZPO)]
IVE	Außergerichtlicher Einigungsversuch im Rahmen des Insolvenzverfahrens [extrajudicial settlement attempt in the course of the insolvency proceedings]
ISP	Schuldenbereinigungsplanverfahren eingeleitet/Antrag auf Eröffnung des Insolvenzverfahrens [initiation of debt settlement plan/initiations of insolvency proceedings]
IVS	Anordnung von vorläufigen Sicherungsmaßnahmen im Insolvenzverfahren [court ordered preliminary safeguard provisions in the course of insolvency]
IVA	Aufhebung von vorläufigen Sicherungsmaßnahmen im Insolvenzverfahren [court ordered revocation of preliminary safeguard provisions in the course of insolvency]
IBE	Eröffnung des Insolvenzverfahrens / Beschluss [institution of insolvency proceedings/court order]
IBA	Abweisung der Verfahrenseröffnung mangels Masse (§ 26 Abs. 2 InsO) [dismissal or suspension of insolvency proceedings due to insufficiency of assets (Section 26, paragraph 2 of the German Bankruptcy Act InSO)]
IWP	Aufhebung des Insolvenzverfahrens (gerichtliche Zwischenentscheidung, zeitlich vor einer Entscheidung über die ggf. beantragte Restschuldbefreiung). Das Insolvenz-Verfahren ist noch nicht beendet. [reversal of insolvency proceedings (judicial interlocutory judgment, before a decision on the possibly applied discharge of outstanding debts). The insolvency proceedings are not completed yet.]
IRB	Erteilung der Restschuldbefreiung [discharge grant of outstanding debts]
IRV	Versagung der Restschuldbefreiung [discharge denial of outstanding debts]
IV. Other criteria:	
[blank]	Es liegen keine (Negativ-)Informationen vor [no (negative) information available]
"*"	Forderung ausgeglichen / Inkassovorgang fruchtbar erledigt (wird zusammen mit dem entspr. Negativmerkmal gemeldet, wenn die dem Inkassovorgang zugrunde liegende Forderungsangelegenheit fruchtbar - d.h. durch Zahlung - erledigt worden ist) [claim settled/collection procedure successfully finished (will be indicated together with the appropriate negative criteria when claim corresponding to collection procedure has been settled by payment)]

AE	Schriftstück nicht zustellbar (ggf. Adressermittlung) [Document cannot be delivered (possibly inquiry into whereabouts)]
+++	Person verstorben [person deceased]
HI	Hinweise zur Person oder Firma [implications to person or firm]
HA	Hinweis zur Adresse (tendenziell risikobehaftete Adressen, z. B. JVA oder andere geschlossene Anstalten) [implications concerning address (mostly risky addresses, e.g. JVA or other)]
* This criteria will expire successively until 2015 ** This criteria will be new from 01.01.2013	
V. References in case of inquiries not or not definitely verifiable	
$$$	Bonitätsprüfung konnte nicht durchgeführt werden, weil die Adresse postalisch falsch oder unvollständig ist. EMPFEHLUNG: Bonitätsanfrage (sofern möglich) mit korrekten bzw. vollständigen Angaben wiederholen [postal address is incorrect or inquiry is incomplete]
TIF	Teilnehmer-Nummer und/oder -Identcode falsch [number of participant and/or participant's identcode incorrect]
BSP	„Business-Sperre", d.h., mit den angegebenen Teilnehmerkennungen sind keine B2B-Bonitätsanfragen durchführbar) ["Business-Lock"]
KBI	**Kein berechtigtes Interesse angegeben [no legitimate interest indicated]**

VI. References in case of deviation of requested data from data recorded at infoscore Consumer Data GmbH

Provided that the system could not find a 100% match to an address or data set stored at infoscore Consumer Data GmbH in a credit inquiry, but phonetic and/or associative search algorithms are able to identify one or more stored data sets with only minor deviations from the requested data, and infoscore Consumer Data GmbH has no information whether or not this data is to be assigned to the person inquired after, a corresponding reference in form of a code will be made.

It has to be expressly emphasized that the data that serves as a basis for the transmitted code cannot necessarily be assigned to the person inquired but also (merely) to a person bearing the same or a similar name, or to a person with the same or a quite similar address. That means that the transmitted code does not necessarily point to the financial situation or the paying habits of the person inquired. The reference is simply to prompt and enable the participant to check requested data, data serving as the basis for a credit inquiry and/or the identity of the requested person.

Reference is made with a 3-digit code composed as follows:

The first digit names the number of (slightly) deviating data sets found (maximum 9).

The second digit shows the "hardest" expression of the respective negative criteria at hand.

H "hard" 1. degree of hardness = debtor book/(consumer) insolvency

M "medium" 2. degree of hardness = judicial collection procedure

W "soft" 3. degree of hardness = extrajudicial collection procedure

The third digit stands for the address component deviating "hardest" from the requested address in case of a deviating address. The following qualifications are possible:

N deviant surname

A deviant address

V deviant first name

G deviant date of birth

The date quoted is the date of origin of the negative criteria at hand. In case of several criteria it is the date of the most recent, “hardest” criteria

Examples:

Example 1: 1WG 22.09.2010 means:

System could not find 100% match to requested data. However, 1 set of data or address data with a deviating date of birth (G) and containing (at least) one negative criteria from the “soft” (W) criteria section (= extrajudicial collection procedure, filed 22.09.2010) was found.

Example 2: 2MA 15.04.2010 means:

System could not find 100% match to requested data. However, 2 sets of data or address data containing negative criteria were found. The most severe expression of the negative criteria in question is part of the “medium” (M) criteria section (= judicial collection procedure, filed 15.04.2010). In this example,the set of data featuring a “medium” criteria deviates from the data requested as to the address (A).

Example 3: 3HV 30.03.2010 means:

System could not find 100% match to requested data. However, 3 sets of data or address data containing negative criteria were found. The most severe expression of the negative criteria in question is part of the “hard” (H) criteria section (= entry in the list of insolvent debtors on 30.03.2010). In this example, the set of data featuring a “hard” criteria deviates from the data requested as to the first name (V).

Example 4: 1WN* 12.02.2010 means:

System could not find 100% match to requested data. However, 1 set of data or address data containing negative criteria was found. The most severe expression of the negative criteria in question is part of the “soft” (W) criteria section (= extrajudicial collection procedure). In this example, the set of data deviates as to the last name (N). The asterisk (“*”) means that the extrajudicial collection procedure has been settled by payment.

VII. Permissible storage period/statutory period for deleting data
a) Deleting data referring to extrajudicial or judicial collection procedures The deletion of data referring to extrajudicial or judicial collection procedures (“soft” and “medium” negative criteria) is subject to the provisions of the German Data Protection Act (BDSG). Pursuant to section 35, paragraph 2, subparagraph 4 of the German Data Protection Act (BDSG), data, if processed for transmission as part of business activities – as is the case for infoscore Consumer Data GmbH – has to be deleted if an examination after the end of the fourth legal year following its first storage confirms that continuing storage is not necessary. **b) Deleting data referring to entries in the list of insolvent debtors** Data referring to entries in the list of insolvent debtors (“hard” negative criteria: EV, HB, HV, EEV and WEV) are subject to the special provisions of the German Code of Civil Procedure (ZPO) which have priority over the above mentioned (general) provisions of the BDSG on the deletion of data. Entries into the list of insolvent debtors are to be deleted after three years at the latest, i.e. at the end of the third (!) legal year according to section 915a, paragraph 1 of the Code of Civil Procedure (ZPO). Pursuant to section 915 b, paragraph 2 of the ZPO, they are regarded as being deleted after the end of three years to the day (!); this means that from that day on – though still stored – this information may no longer be disclosed. **c) Deleting data referring to insolvency, bankruptcy, composition or comprehensive execution proceedings** For this the same legal provisions apply as stated in section a), whereby the discharge grant of outstanding debts (criteria “IRB”) is classified as “settled” and thus it shall be deleted after three years. The criteria “IBA” is stored for five years according to section 26, paragraph 2 of the German Insolvency Act (Insolvenzverordnung). **d) Deletion periods for participants** Provided that the data is processed for own purposes only the data shall be deleted according to section 35, paragraph 2, subparagraph 3 BDSG as soon as the knowledge of this data is no longer necessary to fulfill the purpose of the storage.

2.3.12 Use with alternative programming languages

Deutsche Post Direkt provides you with the source and binary distributions (see also The ADDRESSFACTORY DIRECT distributions) to make it easier to integrate ADDRESSFACTORY DIRECT into your own systems. The distributions themselves use the Java programming language.

However, you can also easily integrate ADDRESSFACTORY DIRECT with other programming languages by using standard web service technology. A prerequisite for this is the use of suitable tools to generate stubs from the web service description of the ADDRESSFACTORY DIRECT interface and a suitable runtime environment for using these stubs. Consult the documentation of your programming environment for information on using these tools.

You can access the public web service description of the ADDRESSFACTORY DIRECT interface at:

Interface	URL
ADDRESSFACTORY DIRECT test server	`https://portal.postdirekt.de/AF-Direct/AF-Direct-TestServer/wsdl`
real ADDRESSFACTORY DIRECT interface	`https://portal.postdirekt.de/AF-Direct/AF-Direct-Service/wsdl`

2.3.12.1 Information on integration in .NET applications

When using the ADDRESSFACTORY DIRECT web service in .NET based applications, please use a `customBinding` instead of a `basicHttpBinding` or `wsHttpBinding` as shown in the following example.

Please note: The following example uses the ADDRESSFACTORY DIRECT *test server at the point highlighted in bold.*

```
<system.serviceModel>
    <bindings>
    <customBinding>
      <binding name="AF-DirectBinding" closeTimeout="00:01:00"
       openTimeout="00:01:00" receiveTimeout="00:10:00" sendTimeout="00:01:00">
      <security authenticationMode="UserNameOverTransport"
includeTimestamp="false">
        <secureConversationBootstrap />
      </security>
      <textMessageEncoding messageVersion="Soap11" writeEncoding="utf-8" >
         <readerQuotas maxDepth="32" maxStringContentLength="8192"
maxArrayLength="16348"
          maxBytesPerRead="4096" maxNameTableCharCount="16348" />
       </textMessageEncoding>
       <httpsTransport maxBufferPoolSize="524288"
maxReceivedMessageSize="65536"
           allowCookies="false" bypassProxyOnLocal="false"
hostNameComparisonMode="StrongWildcard"
           maxBufferSize="65536" transferMode="Buffered"
useDefaultWebProxy="true" />
     </binding>
   </customBinding>
 </bindings>
 <client>
   <endpoint address="https://portal.postdirekt.de/AF-Direct/AF-Direct-
TestServer"
     binding="customBinding" bindingConfiguration="AF-DirectBinding"
     contract="AFService.AFDirect" name="AF-Direct-Port" />
  </client>
<system.serviceModel>
```

With this type of binding you can then access ADDRESSFACTORY DIRECT as follows:

```
      using System;
using System;
using System.Net;
using AF3WebServiceClient_CSharp.AFService;

namespace De.DPWN.DeutschePost.Infosysteme.AddressFactory
{
   public class AddressFactoryFacade
   {
     /// <summary>
     /// Referenz des AddressFactoryWebservice
     /// </summary>
    private AFDirectClient afdService;

    public AddressFactoryFacade(string username, string password)
    {
      try
```

```
            {
      // Optional: WebProxy konfigurieren
      WebProxy wproxy = new WebProxy();
      wproxy.Credentials = CredentialCache.DefaultNetworkCredentials;
      WebRequest.DefaultWebProxy = wproxy;
      // AFD.Service erzeugen
      afdService = new AFDirectClient();

      // Benutzernamen übergeben
      afdService.ClientCredentials.UserName.UserName = username;
      afdService.ClientCredentials.UserName.Password = password;
      }
      catch (Exception ex)
      {
         throw new Exception(ex.Message, ex.InnerException);
      }
   }

   public string CheckAddress(string configName, string mandantId, string
Address)
   {
      try
      {
        // Adresse zerlegen. In diesem Beispiel handelt es sich um die
        // Hausanschrift eines Gebäudes ohne Namensinformationen
        string[] addressParts = Address.Split(new char[] { ',' });
        if (addressParts.Length < 4)
        {
         return= "Die Adresse ist unvollständig";
       }
       // Übergabe für Addressfactory vorbereiten
       processSimpleData psd = new processSimpleData();
       SimpleInRecordWSType simpleInRecord = new SimpleInRecordWSType();
       simpleInRecord.strasse = addressParts[0];
       simpleInRecord.hausnummer = addressParts[1];
       simpleInRecord.ort = addressParts[2];
       simpleInRecord.plz = addressParts[3];

       psd.configName = configName;
       psd.mandantId = mandantId;
       psd.simpleInRecord = simpleInRecord;
       processSimpleDataResponse psdResponse =
afdService.processSimpleData(psd);
       OutRecordWSType outRecord = psdResponse.outRecord;

       return "Done";
     }
     catch (Exception ex)
     {
       throw new Exception(ex.Message, ex.InnerException);
     }
    }
  }
}
```

2.3.12.2 Information on integration into PHP applications

The following minimalist example shows an integration of this type using the example of the ADDRESSFACTORY DIRECT test server. Places where unexpected “tweaks” are necessary are marked in bold in the source text.

```
<!--
 Very simple PHP test client:
README.txt for more information. Please also notice the code comments in this
script.
-->
<?php

$debug = true;

// ------------------------------------------------------------------------
-
// CONFIG
// ------------------------------------------------------------------------
-

// User name
$postdirekt_username = "###INSERT_YOUR_USERNAME_HERE###";

// Password can be empty for TestServer
$postdirekt_password = "###INSERT_YOUR_PASSWORD_HERE###";

// No need for Config name in Test mode,
// HOWEVER: may not be null -> Use any string or empty string!
$configName = "###INSERT_YOUR_CONFIG_NAME_HERE###";

// Optional can be empty for TestServer
$postdirekt_mandant = "###INSERT_YOUR_MANDANT_NAME_HERE###";

// Location of the WSDL
// - > for TestServer:
//  "https://@@ENDPOINT@@/AF-Direct/AF-Direct-TestServer/wsdl"
// - > for the real service:
//  "https://@@ENDPOINT@@/AF-Direct/AF-Direct-Service/wsdl"
$wsdlUrl = 'https://@@ENDPOINT@@/AF-Direct/AF-Direct-TestServer/wsdl';

// ------------------------------------------------------------------------
-
// REAL STUFF
// ------------------------------------------------------------------------
-
$client = new SoapClient($wsdlUrl);

// Print interface and it's types
if ($debug) {
  echo "\n------------------------------------------------------------\n";
  var_dump($client->__getFunctions());
  echo "\n\n------------------------------------------------------------\n\n";
  var_dump($client->__getTypes());
  echo "\n------------------------------------------------------------\n\n";
}

try {

  //
```

```
!!!
```

```
  echo "ERROR: "
    .$fault->faultcode." ERROR-STRING: ".$fault->faultstring . "\n\n";

}

?>
```

2.3.12.3 Information on integration into Websphere applications

Customers who use the ADDRESSFACTORY DIRECT web service from the Websphere application have informed us about the following different interface. A WS security header is constructed in the HeaderHandler of the ADDRESSFACTORY DIRECT source distribution. Please use the following lines to set the ID attribute:

```
usernameToken.addAttribute(new QName("http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd", "wsu"));
usernameToken.addAttribute(new QName("wsu:Id"), UUID.randomUUID().toString());
```

instead of the lines used in our “Plain Java” example:

```
usernameToken.setAttributeNS("http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd", "wsu:Id", UUID.randomUUID().toString());
```

The lines used in our example, in conjunction with the Webshpere application server, lead to an exception.

3 ADDRESSFACTORY AUTOMATIC

3.1 A first quick run-through of a comparison

The following description guides you through your first address comparison USING THE ADDRESSFACTORY AUTOMATIC system.

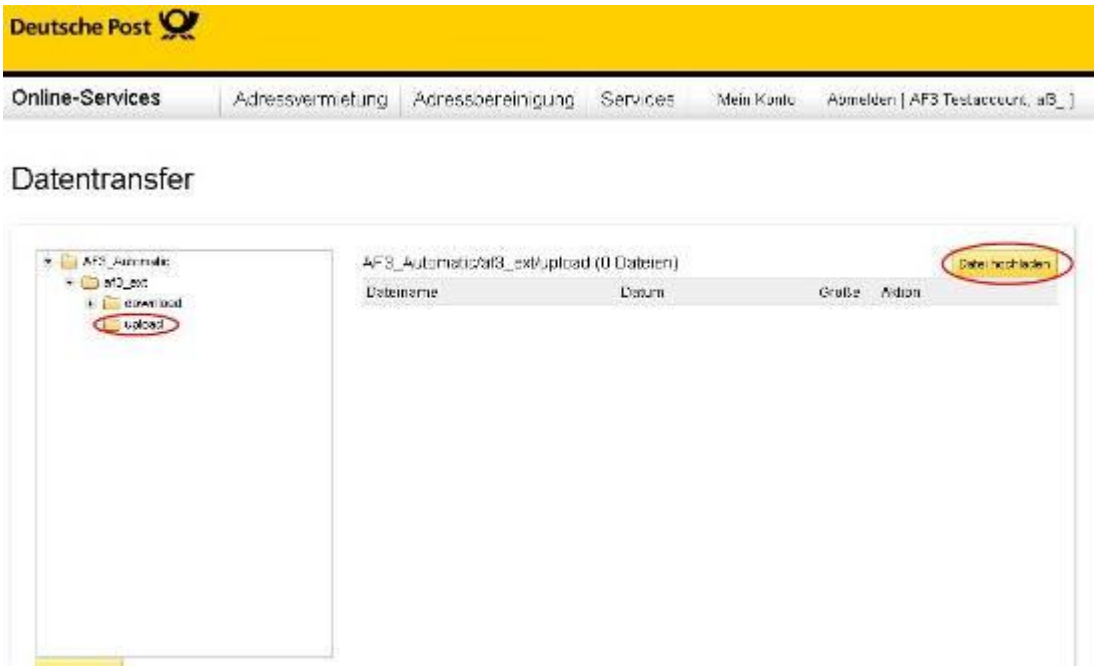
The description assumes that you already have access to the ADDRESSFACTORY AUTOMATIC system. You should also already have been in contact with a Deutsche Post Direkt employee who has prepared the ADDRESSFACTORY AUTOMATIC system for your first use of it.

Please note: The following guide illustrates the use of ADDRESSFACTORY AUTOMATIC *via the web access to our data exchange platform. Alternatively, it is also possible to access the data exchange platform via the SFTP protocol and current SFTP clients.*

3.1.1 Logging into the online services

- Log in to the Deutsche Post Direkt online services at http://www.postdirekt.de/online-services. Under Services, click on Datentransfer [Data transfer].

- You will now be taken to the data exchange platform (DEP) of Deutsche Post Direkt which enables you to exchange data with us securely. In the directory tree on the left-hand side, navigate to the `AF3_Automatic/<USERNAME>/upload` directory, whereby you replace `<USERNAME>` with the user name given to you by Deutsche Post Direkt.



3.1.2 Upload files

- Click on Datei hochladen [Upload file], then on Datei hinzufügen [Add file] and select the file with the data to be compared from your hard drive. Then click on Dateien hochladen [Upload files] until the data has been transferred to Deutsche Post Direkt.

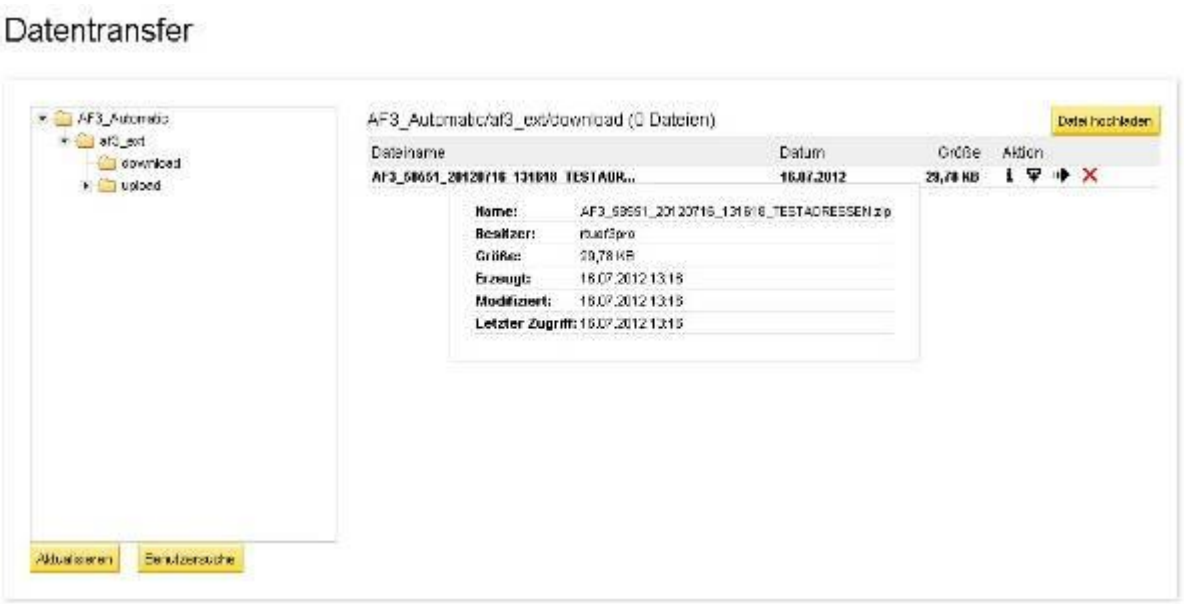
Please note: In terms of their format and structure, the uploaded files must correspond to the agreements concluded in advance with a Deutsche Post Direkt employee. Files that do not correspond to the agreed structure will either be rejected by the system or – if the system fails to detect the deviation – an unsuccessful comparison will be carried out.

3.1.3 Notification of completion

- The file will generally be retrieved immediately from the `upload` directory and is then no longer visible there after refreshing the page. When processing starts in our data center, we will notify you by sending an e-mail to the address that you specified when registering for Deutsche Post Direkt's online services.
- Once processing is complete, you will again receive an e-mail from the system. We will attach a comparison record to this e-mail which will provide you with a clear summary of the most important results of the comparison.

3.1.4 Download result data

- As above, log in to Deutsche Post Direkt online services, click on "Datentransfer" [Data transfer] and navigate to the `/AF3_Automatic/<USERNAME>/download` directory on the data exchange platform.



- There you will find a ZIP archive with the result data. In addition to information from the system – number, data and time of the comparison – the file name also includes the name of the input file to make it easier to identify.
- The content of the ZIP archive varies according to your agreements with Deutsche Post Direkt. In many cases, we will provide you with an overall result file in the archive. Alternatively, we can also provide you with an archive containing various partial results – e.g. deliverable and non-deliverable data records. Together with the files, you will receive a PDF document listing the configuration used for the comparison.

3.2 Basics of the ADDRESSFACTORY AUTOMATIC system

The ADDRESSFACTORY AUTOMATIC product variant is geared towards users who wish to regularly have large address databases compared by Deutsche Post Direkt with one or more clearly defined comparison settings.

A Deutsche Post Direkt employee defines the comparison settings together with you. Then you simply upload data to the Deutsche Post Direkt secure data exchange platform (DEP) as required. You can obtain the compared results via Deutsche Post Direkt's data exchange platform again.

3.2.1 Setting up the system

You need a user name and password to access the ADDRESSFACTORY AUTOMATIC system. A Deutsche Post Direkt employee must set up the ADDRESSFACTORY AUTOMATIC system for you. During the setup process, the employee will manually compare your data once in order to

- prepare the ADDRESSFACTORY AUTOMATIC system for the format and structure of your data,
- select comparison settings that are appropriate for your data, and
- define the format and structure of the output file(s).

This collection of settings is referred to as a configuration and it effectively acts as a template for all your subsequent comparisons with the ADDRESSFACTORY AUTOMATIC system.

While a configuration is usually assigned to a user name, if required it is also possible to use several configurations in parallel (see also Advanced functions). In this case, please specify the name of the configuration to be used when you upload the data using an ID in the file name. You therefore have the option of also using the ADDRESSFACTORY AUTOMATIC system if you wish to regularly upload files with different formats or wish to perform your comparisons with different comparison settings.

3.2.2 Data transfer

The ADDRESSFACTORY AUTOMATIC system always uses Deutsche Post Direkt's data exchange platform (DEP) for the transmission of data to and from Deutsche Post Direkt.

The universal data exchange platform supports the following types of access (see also Uploading data).

- The interactive uploading of data is made possible by the web interface. (see also A first quick run-through of a comparison).
- Alternatively, it is possible to transfer your data to the data exchange platform via Secure File Transfer Protocol (SFTP). With this method, you can automate the transmission of data or use an SFTP client as an interface instead of our web interface.

3.3 Uploading data

The following sections describe the file types accepted by the ADDRESSFACTORY AUTOMATIC system, the possible transmission types from and to Deutsche Post Direkt and – as a special case – the selection of one of multiple configurations.

3.3.1 Accepted delivery formats

The ADDRESSFACTORY AUTOMATIC system accepts

- Text files of any name with a fixed or variable column width (see also Supported formats in input and output).
- ZIP archives of any name which contain one or more text files which meet the requirements described above. In the case of multiple files in one archive, see also the information under Advanced functions.

The system removes the uploaded file immediately after uploading from the target directory. The disappearance of the file signals to you that the system is now checking your file and, if successful, will further process it. You will then receive notifications about the further steps the system has taken.

3.3.2 Uploading via the web interface

The easiest way of interactively transferring data to Deutsche Post Direkt's data exchange platform is by the web interface of the data exchange platform. All you need for this at your end is a web browser with access to the public Internet.

An exact description of the process can be found in the section A first quick run-through of a comparison.

3.3.3 Uploading via SFTP

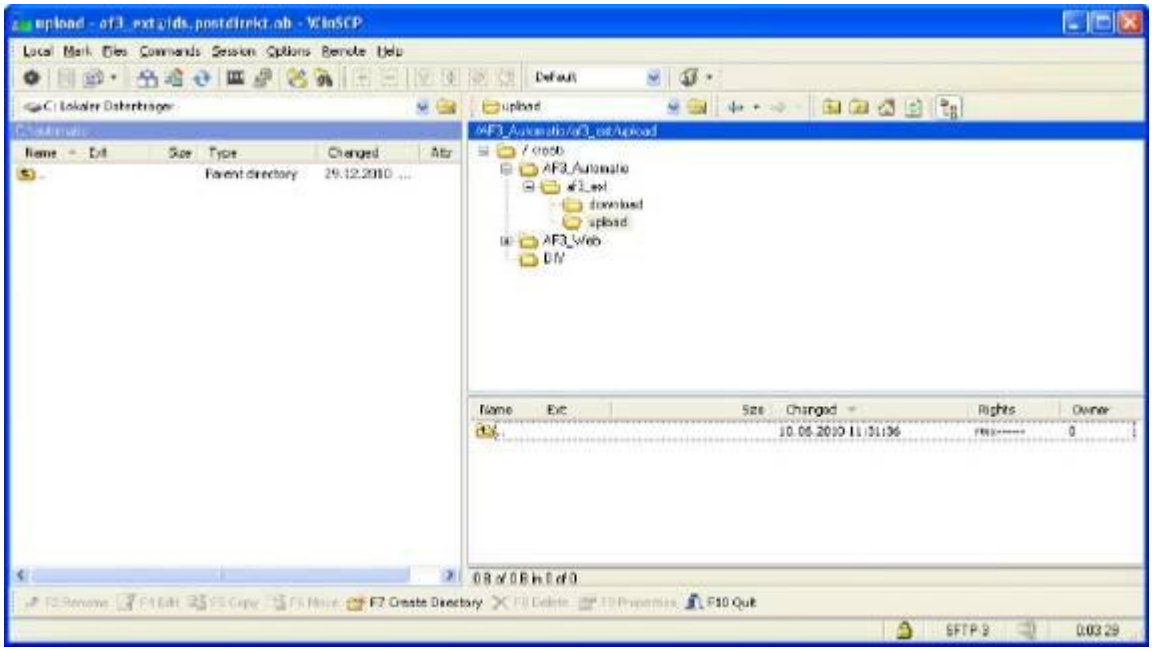
As an alternative to interactive uploading, we offer you the use of the Secure File Transfer Protocol (SFTP) to access the data exchange platform. We recommend that you use this method if you wish to automate the upload of data from your IT system or if you regularly use SFTP clients for data transmission.

Please note: The following illustrations relate to the free-of-charge SFTP client WinSCP. The illustration in our SFTP client may deviate where applicable. In this case, consult the manual for your SFTP client for information on how to use the software.

Open the SFTP client and enter the following access details for the data exchange platform of Deutsche Post Direkt:

Setting	**Value**
Host	portal.postdirekt.de
Port	22 (standard)
User	Your user name for the data exchange platform. You will be given this value from Deutsche Post Direkt.
Password	Your password for the data exchange platform. You will be given this value from Deutsche Post Direkt or it will be assigned by you.
Path	If your SFTP client requests an initial path from you, specify `/AF3_Automatic/<BENUTZERNAME>/upload`, whereby the user name is the name of the “User” named above.
Private key file	As an option, the data exchange platform also supports public key authentication. Contact us about this.

Switch to the `/AF3_Automatic/<USERNAME>/upload` directory. This is the directory in which your data to be cleansed is located.



3.4 Advanced functions

3.4.1 Using multiple configurations

In the ADDRESSFACTORY system, a configuration is a known set of comparison settings and definitions relating to input and output files that is assigned to you by Deutsche Post Direkt. With regard to the ADDRESSFACTORY AUTOMATIC system, a configuration specifies:

- the format and structure of the input files uploaded by you,
- the work to be carried out during the comparison of your data, and
- the format and structure your result data should have; which filter settings should be used when providing your result files.

In many cases, you will notice very little about the configuration in the initial discussion with a Deutsche Post Direkt employee – particularly if you always upload the same types of input files which are to be processed with the same comparison settings and whose result files are to be provided in the same format.

If, however,

- you have more than one type of input file in terms of the format and/or structure, or
- if you would like different comparisons to be carried out with different comparison settings, or
- if you would like to have the result files provided to be filtered in a different way,

a Deutsche Post Direkt employee will assign you several configurations, and each of these will correspond to one of your use cases. Each of the configurations will be provided with a name and these names will be communicated to you.

Example: The configuration name "fix_bac_fnc_pdc" could expect a text fix format specified by you which is processed with the BasicAddressCheck, FormalNameCheck and PremiumDeliveryCheck modules (and certain detailed settings). The configuration name “var_bac”, on the other hand, could expect a text variable format specified by you which is only ever processed with the BasicAddressCheck module.

The ADDRESSFACTORY AUTOMATIC system will treat one of the configurations agreed with you as the “standard configuration”. The system will then always use this configuration if it does not receive any other information about the configuration to be used.

Alternatively, you can prompt the system to select a certain configuration by using the character string --

```
--<KONFIGURATIONSNAME>
```

as part of the name of the uploaded file.

Example: The system will attempt to process the daten2010--fix_bac_fnc_pdc.zip file using the “fix_bac_fnc_pdc” configuration. However, to process the daten2010.zip file, the system will use the configuration identified by Deutsche Post Direkt as your standard configuration.

3.4.2 Using multiple files

In the ADDRESSFACTORY AUTOMATIC system, you have the option of having multiple files cleansed at the same time by sending multiple files bundled together in a ZIP archive. All the files in this archive must have the same format and the same structure as you agreed with Deutsche Post Direkt.

The same comparison settings will be applied to each of the files.

If a duplicate check is performed on your data, the priority order of your files will have an impact on the identification of header duplicates. During this check, the ADDRESSFACTORY AUTOMATIC system proceeds in the following order:

- As in the ADDRESSFACTORY WEB system, your own negative files always have priority over your own positive files (see also further down).
- Within the negative and positive files, the system proceeds in alphabetical order. If a certain priority order is important for you, you can name your files as follows, for example: “A_CustomerData.txt”, “B_AdditionalCustomerData.txt”, etc.

3.4.3 Using positive and negative files

The ADDRESSFACTORY AUTOMATIC system offers you the option of working with your own negative files. In order to identify the file uploaded as a negative file, choose a name for the file that starts with exactly one minus sign, e.g. “-BadPayers.txt”.

Please note: If you upload a negative file to the system, a duplicate check will automatically be performed on your data if the DoubleClean module was selected as part of your configuration in advance with Deutsche Post Direkt. If no other comparison options have been agreed, a search will be carried out for duplicates at an individual level with hardness 2 by default (see also DoubleClean (DUB)).

3.5 Notifications

The ADDRESSFACTORY AUTOMATIC system provides you with a notification at multiple points in the processing of a comparison via an e-mail to the e-mail address you specified upon registration.

You receive the following notifications specifically:

- Firstly, we will inform you as soon as we have accepted the input file you have uploaded and the comparison of the input file at the Deutsche Post Direkt data center has begun.
- We will then inform you when the comparison is completed. After receiving this e-mail, you can retrieve the cleaned data from the Deutsche Post Direkt data exchange platform. Attached to this e-mail, we will send you a comparison log which contains a summary of your comparison as well as a price summary.
- Finally, we will also inform you if the comparison had to be interrupted at any time. Typical reasons for such an interruption include:
    - Your input file does not correspond to the specifications as regards format and structure which we have saved for your use of ADDRESSFACTORYAUTOMATIC.
    - A configuration named by you does not exist.
    - A technical error has occurred in the Deutsche Post Direkt data center which has interrupted the comparison. In this case, Deutsche Post Direkt will attempt to restart your comparison at the earliest opportunity.

3.6 Downloading result data

You can download result data for a comparison as soon as you have been notified via e-mail by the ADDRESSFACTORY AUTOMATIC system that your comparison is complete.

In the same way as for uploading data, you can also download result data in one of two ways:

- The web interface to the data exchange platform of Deutsche Post Direkt is a particularly easy, interactive way to obtain your result data.
- For automatic access and for users who wish to use an SFTP (Secure File Transfer Protocol) client to transfer their data, we recommend access via SFTP.

Both variants are described in detail in the section on Uploading data. In this representation, you would need to replace the `/AF3_Automatic/<USERNAME>/upload` directory with the `/AF3_Automatic/<USERNAME>/download` directory in which the ADDRESSFACTORY AUTOMATIC system stores your result data.

3.6.1 Naming conventions for result data

The ADDRESSFACTORY AUTOMATIC system uses the following naming convention to make it easier for you to assign a result file which has been provided to your original input file.

	General	**Example**

Input file	`<filename>.<extension>`
	
	in the directory
	`/AF3_Automatic/<USERNAME>/upload/`
		`myfile.txt`

Associated output file	`AF3_<N+>_<YYYYMMDD>_<HHMMSS>_<filename>.zip`
	
	in the directory
	`/AF3_Automatic/<USERNAME>/download/`
	
	Here, the abbreviations have the following meaning:
	`<N+>`: Project ID, of any length
	`<YYYYMMDD>`: Date of provision
	`<HHMMSS>`: Time of provision
	`<filename>`: Your original file name without an extension
		`AF3_12345_20110810_112700_myfile.zip`

3.6.2 Advanced provision options

A Deutsche Post Direkt employee can perform the following advanced settings for you in the ADDRESSFACTORY AUTOMATIC system.

- Do you need an easy way of protecting your data against unauthorized access to the transmission path? In this case, the ADDRESSFACTORY AUTOMATIC system can assign the ZIP files provided with a password which you have agreed in advance with a Deutsche Post Direkt employee.
- Do you need a high level of protection of your data against unauthorized access to the transmission path? In this case, the ADDRESSFACTORY AUTOMATIC system can encrypt the files provided with strong public key cryptography.
- Do you wish to have the data provided on one of your systems instead of retrieving it from the Deutsche Post Direkt data exchange platform? In this case, Deutsche Post Direkt provides you with the option of transferring the result data to an SFTP server of your choice.

Contact us about these options where applicable (Contact).

4 ADDRESSFACTORY comparison behavior, modules and status keys

4.1 Technical basis

4.1.1 Introduction

Depending on your comparison settings, the ADDRESSFACTORY system uses an extensive set of rules to correct your data, enhance additional information and identify duplicates in your data. The system is set up in such a way that it uses the company's tried and tested standard settings, which can be successfully applied in many cases.

In order to benefit from the full performance capability of the ADDRESSFACTORY system and tailor the comparison behavior of the system precisely to your requirements, it is necessary to understand the set of rules and the impact of the individual comparison settings more fully. To this end, this section introduces you to many details of the ADDRESSFACTORY system that are essential for a comprehensive understanding.

- The **Technical basis** section first explains concepts on which the whole ADDRESSFACTORY system is based.
- Finally, the **Modules and comparison settings** section introduces you to the individual comparison modules of the ADDRESSFACTORY system in detail and explains which comparison settings can be used to influence the work of the modules.
- The **Key system** section shows how these underlying concepts are reflected in the comparison behavior of the system. With its status keys on each record that has been processed, the ADDRESSFACTORY key system provides you with detailed information on the work that has been carried out. An understanding of the technical basis is essential in order to fully understand the matters about which information is issued in the system.

4.1.2 Overview of the ADDRESSFACTORY comparison modules

In the ADDRESSFACTORY system, a comparison module (or module for short) is a coherent set of address cleansing or enhancement activities. The BasicAddressCheck module thus brings together all the postal checks and corrections, while the GeoMatch module combines all the services relating to the enhancement of geocoordinates. Understanding how the different modules are divided helps with defining comparison settings correctly and interpreting the results of a comparison (shown in the status keys).

The following table gives you an overview of the modules available in the ADDRESSFACTORY system:

Module (click on the module name to find out more about the module)	**Brief description**
BasicAddressCheck (BAC)	Checking and correction of postal information. BasicAddressCheck is an address cleansing module that carries out the postal checking of your addresses. A postal check makes sure that the postal part of the address exists and is correct. Any errors that can be corrected are corrected in the process. The information checked by the BasicAddressCheck includes the following: • Street addresses: Street [in some cases in conjunction with the house number], postal code, town/city, town district • PO box addresses: PO box number, postal code, town/city • Packstation addresses: Packstation number, postal code, town/city • Postfiliale Direkt addresses: post office number, postal code, town/city • Bulk recipients' addresses: Bulk recipient's postal code, town/city
FormalNameCheck (FNC)	Checking and correction of name information. FormalNameCheck is an address cleansing module that carries out the checking and correction of individuals, households and buildings. Fields typically edited by FormalNameCheck include: Form of address, title, first name, surname, noble title, name prefix, name suffix and house number.
PremiumDeliveryCheck (PDC)	Deliverability check PremiumDeliveryCheck is an address cleansing module that supplies deliverability and non-delivery information about individuals, households and buildings in its data.
MoveProfessional (MOV)	Change-of-address check The MoveProfessional module is an address cleansing module that carries out the checking of changes of address and the enhancement of relocation addresses.
DoubleClean (DUB)	Comparison of duplicates Checking for duplicates in the ADDRESSFACTORY system is carried out by the DoubleClean module. DoubleClean enables you to carry out error-tolerant detection of individuals, households and buildings that appear in your data twice or multiple times. This type of multiple occurrence is referred to as a duplicate.

GeoMatch (GEO)	Enhancement with geocoordinates GeoMatch is an address enhancement module that enhances its records with geocoordinates. GeoMatch adds geocoordinates in a large number of common coordinate systems at the levels of buildings and streets.
PhoneMatch (PHM)	Enhancement with telephone numbers PhoneMatch is an address enhancement module that you can use to enhance your addresses with phone numbers. PhoneMatch adds the phone numbers of individuals and households, and can be restricted to records where you do not yet have a phone number.
LocalMatch (MDL)	Enhancement with socio-demographic information The LocalMatch module is an address enhancement module that you can use to enhance your data with socio-demographic information. The LocalMatch module currently only contains the RiskControl products from Deutsche Post Direkt.
FileMatch (NEG)	Comparison of negative lists The FileMatch module carries out the checking of your data against predefined negative files such as the Robinson list or the fake list supplied by Deutsche Post Direkt.

4.1.3 Records, levels and address types

The ADDRESSFACTORY system generally works on the basis of records. A record is understood as a set of associated fields. A record will typically be represented in your input data as a line. All statements that the ADDRESSFACTORY makes in relation to your data are always linked to a record. Here are some examples of records:

First name	Surname	Street	House no.	Postal code	Town/city	PO box Number	PO box Postal code	PO box Town/city
Hans	Mustermann	Hauptstraße	1	12345	Musterort			
Gerda	Musterfrau					18 20	23457	Musterhausen
	Musterlein	Dorfstraße	45	23456	Musterhausen			
		Bahnhofplatz	3a	23456	Musterhausen			

In the example records, there is a range of possible properties of records:

- Hans Mustermann indicates a specific *individual*. In addition to the first name and surname, it is also necessary to specify an address in order to indicate an individual. In this case the address is a *street address*. Alternative address types that can indicate an individual in conjunction with first names and surnames are: *PO box address, Packstation address and Postfiliale Direkt address* (The fifth ADDRESSFACTORY address type, *bulk recipient's address*, does not indicate an individual).
- In the case of Gerda Musterfrau, this is also an individual. In contrast to Herr Mustermann, Frau Musterfrau is exclusively identified by means of her PO box address.
- With the Musterleins, we are looking at a *household*. It is not known which individual people are covered by the family name. For households too, an address is required in addition to the surname. In practice, household statements will almost always apply to the combination of surname and street address.
- Bahnhofplatz 3a indicates a *building*. The record does not provide any information about the households or individuals within this building. Nevertheless, the ADDRESSFACTORY system can also provide valuable information on buildings, but this information may inevitably be less plentiful and less specific than information on individuals or households (geocoordinates, existence of the building).

The example records shown above can be used to explain a number of underlying concepts of the ADDRESSFACTORY system.

4.1.3.1 Levels

In the ADDRESSFACTORY system, a level is understood as a set of fields of a record. The four levels known in the system, *street*, *building*, *household* and *individual*, are tailored in such a way that they cover an increasingly large proportion of the record (see table below).

The ADDRESSFACTORY system uses the levels construct in several contexts:

- When specifying **comparison settings**. For example, you can specify here that you are only interested in deliverability information if it relates to the individual. If such a setting has been specified, the ADDRESSFACTORY system will *not* alternatively provide you with a statement such as "Deutsche Post Direkt does not have any information about the individual 'Hans Mustermann' but the 'Mustermann' household is deliverable at the address provided".
- In connection with **information** that the system provides. For example, during the enhancement of geocoordinates, the ADDRESSFACTORY system will also provide information about whether the coordinates refer to a building or (less accurately) a point in the street.
- In connection with **corrections** that the system makes. For example, during a FormalNameCheck correction, the ADDRESSFACTORY system will also always specify the "severity" of the change: Whether the whole person has changed as a result of the correction or only the building has been corrected.

The following table shows the fields that together make up a level.

The level...	**covers ...**
Street	The combination of • Town/city • Postal code and • Street
Building	The combination of • Town/city • Postal code • Street and • House number (where applicable with house number suffix), or PO box number, Packstation number or post office number
Household	The combination of • Town/city • Postal code • Street, where applicable • House number (where applicable with house number suffix), or PO box number, Packstation number or post office number and • Surname (where applicable with name suffix)
Individual	The combination of • Town/city • Postal code • Street, where applicable • House number (where applicable with house number suffix), or PO box number, Packstation number or post office number • Surname (where applicable with name suffix) • First name (potentially with form of address, title, noble title)

4.1.3.2 Address types

In theory, the ADDRESSFACTORY system can receive up to five address types in parallel in one record. These include:

- Street address
- PO box address
- Packstation address
- Postfiliale Direkt address
- Bulk recipient's address

In practice, a maximum of two to three address types will appear in a record, for example if you also have a PO box address for an individual in addition to the street address.

The ADDRESSFACTORY system is prepared for providing information on these different address types in parallel. The address type concept is therefore also reflected in the key system. For example, with the parallel delivery of PO box and street address, the system makes statements such as: "The individual 'Hans Mustermann' is deliverable at the specified PO box address. However, at the specified street address, only the 'Mustermann' household is deliverable".

4.1.4 Activities

As already described in connection with the ADDRESSFACTORY comparison modules, in the ADDRESSFACTORY system a coherent set of address cleansing or enhancement activities are brought together in one module. For example, all the activities that deal with the postal check and correction of the records provided are included under the module name BasicAddressCheck (BAC).

Within the modules, some activities are repeated in different contexts. It is helpful to understand these activities in order to be able to interpret the results of the ADDRESSFACTORY system – shown in the status keys – in detail. The following table summarizes the most important activities of the ADDRESSFACTORY system:

Activity	**Function in terms of content**
Enhancement	Adding information on the basis of formatting/structuring or reference databases
Validity check	Checking the validity of input data (e.g. missing entries)
Identification	Finding a record in Deutsche Post Direkt's reference databases
Correction	Corrections to the record on the basis of reference databases or on the basis of formatting/structuring
Separation	Separating content from one field and inserting it into another field (e.g. separating the town district from the town/city field)

4.1.4.1 Enhancement

An enhancement refers to the enhancing of a record through information from Deutsche Post Direkt's reference databases or through formatting/structuring.

In principle, the ADDRESSFACTORY system only refers to an enhancement when it adds information that was not provided with the record. For example, the addition of a house number would constitute an enhancement. However, if an empty house number field is filled with a house number that was provided in the street field together with the street, this does *not* constitute an enhancement (but a separation, see below).

In individual cases, in order to interpret the results, it may be helpful to know that enhancements (and some other activities within the ADDRESSFACTORY system as well) can be based on two possible sources:

- The **formatting/structuring** process works on your data without consulting reference data. This means that formatting/structuring works without using Deutsche Post Direkt information on specific individuals, households or buildings. However, formatting/structuring can still deliver helpful information. For instance, in the example below formatting/structuring can recognize that "Hans" is clearly a "Herr" [Mr.] (enhancement of the form of address). In the example, formatting/structuring recognizes that the first name provided, "Mustermann", is probably the surname and the surname provided, "Hans", is probably the first name (correction of first name and surname).

Please note: Formatting/structuring is based exclusively on generally applicable information about common first names, surnames, forms of address, etc. It is therefore not possible to draw any conclusions about whether Hans Mustermann actually exists and resides at the address provided on the basis of the statements from the formatting/structuring process. Formatting/structuring is therefore also mostly restricted to minor changes.

Example 1: Formatting/structuring

Input: Vorname = Mustermann, Name = Hans, Straße = Sträßchensweg, Hausnummer = 10, PLZ = 53113, Ort = Bonn [First name = Mustermann, Surname = Hans, Street = Sträßchensweg, House number = 10, Postal code = 53113, Town/city = Bonn]
Output:Anrede = Herr, Vorname = **Hans**, Name = **Mustermann**, Straße = Sträßchensweg, Hausnummer = 10, PLZ = 53113, Ort = Bonn [**Form of address = Mr**, First name = **Hans**, Surname = **Mustermann**, Street = Sträßchensweg, House number = 10, Postal code = 53113, Town/city = Bonn]

- The comparison with the Deutsche Post Direkt **reference data** compares your data with individuals, households and buildings that Deutsche Post Direkt knows exist. The comparison with the reference data is much more powerful than the formatting/structuring. The house number and town/city are enhanced in the example below. Please note that these enhancements are only possible because the ADDRESSFACTORY system can infer from its reference data "Sträßchensweg" is located in the postal code "53113" in the city "Bonn". As only one "Hans Mustermann" exists at "Sträßchensweg 10, 53113 Bonn", the system can enhance the associated house number.

Example 2: Enhancement of house number and town/city

Input: Anrede = Herr, Vorname = Hans, Name = Mustermann, Straße = Sträßchensweg, Hausnummer = **<leer>**, PLZ = 53113, Ort = **<leer>**[Form of address = Mr, First name= Hans, Surname = Mustermann, Street = Sträßchensweg, House number = **<blank>**, Postal code = 53113, Town/city = **<blank>**]
Output: Anrede = Herr, Vorname = Hans, Name = Mustermann, Straße = Sträßchensweg, Hausnummer = **10**, PLZ = 53113, Ort = **Bonn** [Form of address = Mr, First name = Hans, Surname = Mustermann, Street = Sträßchensweg, House number = **10**, Postal code = 53113, Town/city = **Bonn**]

4.1.4.2 Validity checks

During the validity check, the ADDRESSFACTORY system primarily checks the completeness of your input data for the requested work. Discrepancies in the validity check (e.g. a missing postal code in the postal check) may result in it not being possible to carry out the requested work. However, in many cases the ADDRESSFACTORY system can work round missing input data, e.g. by working out the postal code from the combination of street and town/city.

Validity checks mainly concern logical validity. Example: A house number is only queried as missing if it is not included in the record provided as a whole unit. However, if the system can obtain a house number by separating it from the street name, the house number is then not queried as missing even if the house number field provided was blank.

Please note: Validity statements (or the absence of invalidity statements) do not say anything about the actual existence of an individual, household or building. It is for example common for the system to recognize a record that has been entered, such as "Hans Mustermann, Sträßchensweg 10, 53113 Bonn", as a valid individual because all the necessary information relating to an individual is present. It is only during identification, which checks the existence of an individual, household or building in Deutsche Post Direkt's reference data, that the system can make statements relating to existence.

4.1.4.3 Identification

Identification is one of the most important activities of the ADDRESSFACTORY system and it is performed by almost all modules. However, this activity is expressed primarily through indirect statements such as statements on the correctness of a record or corrections that have been carried out. The finding of records that have been entered in Deutsche Post Direkt's reference databases is referred to as identification. Following a successful identification, the system can carry out extensive work on your data, and this work will be based on a comparison with Deutsche Post Direkt's reference databases. The following work is only possible after a successful identification, for example:

- Correctness statements such as "the street address provided was correct" or "the individual provided was correct".
- Significant corrections to the street, postal code, town/city, name fields, etc. (for example: Marcus -> Markus; the system can only make this decision on the basis of knowledge about the real person). However, the system can make some minor corrections without identification through formatting/structuring alone (for example: MArkus -> Markus).
- Deliverability check

A key control variable in the identification process is the comparison hardness (or hardness for short), which determines the maximum number of deviations allowed between the record that was entered and the reference databases so that an identification can still take place. As this concept of hardness is so central to the functioning of the ADDRESSFACTORY system, a whole section has been devoted to it (see Hardnesses).

In the ADDRESSFACTORY system, a successful identification is referred to as a hit. Unsuccessful identification attempts are referred to as misses.

4.1.4.4 Correction

Corrections are expressed in many places within the system. Correction is directly linked with identification. This is because, even if some simple corrections are possible without identification (e.g. MArkus -> Markus), by far the most corrections are based on the comparison between the data entered and Deutsche Post Direkt's reference data.

Just as with identification, the concept of hardness is also central to correction. To this end, hardness is best understood as the permitted distance between the data entered and Deutsche Post's reference data. This results in two possible interpretations:

- During the **identification** process: the maximum deviations that can exist between a record that has been entered and Deutsche Post Direkt's reference databases so that the ADDRESSFACTORY system still identifies the two records as belonging together.
- During the **correction** process: the maximum changes that the ADDRESSFACTORY system is allowed to make to your data.

It is easy to see that these two interpretations of hardness are just two sides of the same coin. As this concept of hardness is so central to the functioning of the ADDRESSFACTORY system, a whole section has been devoted to it (see Hardnesses).

Finally, an important principle of corrections in the ADDRESSFACTORY system is that corrections are evaluated separately at field level and at record level. For example, the removal of a house number suffix is perceived as a significant correction at field level ("Das Feld hat sich erheblich geändert" ["The field has changed significantly"]). However, at the level of the record as a whole this correction should only be classed as a minor correction – ultimately the presence of an incorrect house number suffix will not result in your item being non-deliverable. You can also find more on this topic in the Hardnesses section.

4.1.4.5 Separation

In the ADDRESSFACTORY system, a separation refers to the process of separating out content from a field in order to transfer it to another field.

Example:

Input: Straße = Sträßchensweg 10 [Street = Sträßchensweg 10]
Output: Straße = Sträßchensweg, Hausnummer = 10 [Street = Sträßchensweg, House number = 10]

A separation of this type is delimited by a correction in order to signal that the data has already been provided by the user. However, irrespective of this a correction can follow a separation. For example: Separation of the house number from "Sträßchensweg 10", then correction of the house number from "10" to "11".

The following separations are performed by the ADDRESSFACTORY system:

Source field	Target field
First name	Form of address, title, noble title, name prefix, surname
Surname	Form of address, title, noble title, first name, name prefix, name suffix
Street	House number, house number suffix
House number	House number suffix
Town/city (street address, PO box, Packstation, Postfiliale Direkt, bulk recipient)	Town/city suffix
Town/city (street address)	Town district

4.1.4.6 Deliverability check

A deliverability check is understood as the specification of the (non-)deliverability of individuals, households and buildings based on Deutsche Post Direkt's reference data.

For all records, the ADDRESSFACTORY system can provide information on the deliverability of individuals, households and buildings that it can identify (see also Identification and Fallback rules). The system can also evaluate deliverability separately by address type

Example: Deliverability with fallback and multiple address types
Input: Vorname = Hans, Nachname = Mustermann, Straße = Sträßchensweg, Hausnummer = 10, PLZ (Hausanschrift) = 53113, Ort (Hausanschrift) = Bonn, Postfach = 1234, PLZ (Postfach) = 53999, Ort (Postfach) = Bonn [First name = Hans, Surname = Mustermann, Street = Sträßchensweg, House number = 10, Postal code (street address) = 53113, Town/city (street address) = Bonn, PO box = 1234, Postal code (PO box) = 53999, Town/city (PO box) = Bonn]
Output: Person "Hans Mustermann" unter der Postfachanschrift zustellbar, Person unter der Hausanschrift nicht zustellbar, Haushalt "Mustermann" unter der Hausanschrift nicht zustellbar, Gebäude "Sträßchensweg 10" zustellbar. [The individual "Hans Mustermann" is deliverable at the PO box address, the individual is not deliverable at the street address, the household "Mustermann" is not deliverable at the street address, the building "Sträßchensweg 10" is deliverable.]

4.1.5 Hardnesses

Comparison hardnesses (or hardnesses for short) are in many ways the most important concept in the ADDRESSFACTORY system. An understanding of hardnesses is not only important in order to be able to understand a lot of the comparison decisions made by the system. The ability to set hardnesses also makes it one of the most important parameters in almost every module of the ADDRESSFACTORY system.

Hardness is best understood as the **permitted distance between the data entered and Deutsche Post's reference data**.

Example: Intuitive understanding of hardnesses

It is easy for people to grasp that the “distance” between the names “Hans Mustermann” and “Hansi Mustermann” is smaller than the “distance” between “Hans Mustermann” and “Horst Muttermann”. In the same way, the “distance” between “Sträßchensweg” and “sträßchensweg” is smaller than the “distance” between “Sträßchensweg” and “Strassenallee”.

This idea of distance results in two interpretations for the ADDRESSFACTORY system.

- During the identification process: the maximum distance that can exist between a record that has been entered and Deutsche Post Direkt’s reference databases so that the ADDRESSFACTORY system still identifies the two records as belonging together.
- During the correction process: the maximum changes that the ADDRESSFACTORY system is allowed to make to your data (in other words: the maximum distance that the system can bridge with its corrections in order to arrive at the corrected data from the data that has been entered.

It is easy to see that these interpretations of hardness are just two sides of the same coin.

4.1.5.1 Definition of the ADDRESSFACTORY hardnesses

The ADDRESSFACTORY system has four hardness levels that are used in many places in the system and are interpreted in the same way in each case. The hardnesses are named “hardness 0” to “hardness 3”, where “hardness 0” refers to the “hardest hardness”, i.e. the hardness that tolerates the smallest distance between your data and Deutsche Post Direkt’s reference data. The following table shows the interpretation of these hardnesses.

Hardness	**Interpretation**
Hardness 0	Hardness 0 means “absolutely identical”. Any deviation between a field in your data and Deutsche Post Direkt’s reference data means that a record cannot be identified. This also includes the position of spaces In other words: With hardness 0, the ADDRESSFACTORY is not allowed to make any changes in order to compare your data with Deutsche Post Direkt’s reference data. With the setting hardness 0, you only obtain confirmations for records that you have provided in a form that is completely identical to the spelling in the reference data. Any deviations result in a miss.
Hardness 1	Hardness 1 means “slightly different”. A field is found with “hardness 1” if the deviations between a field in your data and Deutsche Post Direkt’s reference data are only of the following type: **For all fields** • Differences in case (upper and lower case) • Differences in the way that umlauts and the German symbol for double s are written (ä,ö,ü,ß versus ae, oe, ue, ss) • Letters with or without an accent • Position of separators (- / \ _ . , : ; ~) • Number of consecutive spaces (but not the presence of spaces) • Differences in leading and ending spaces • Differences in other special characters

	Additional rules for street fields • Written as “Straße” [“Street”] or “str” [“St.”] • Presence of the keyword “Packstation” • Presence of the keyword “Postfach” [PO box] • Presence of the keyword “Postfiliale” • Presence of spaces and number of consecutive spaces **Additional rules for PO box number fields** • Presence of spaces and number of consecutive spaces
Hardness 2	Hardness 2 means “error-tolerant hard”. Error tolerance refers to the ability of the ADDRESSFACTORY system to also be able to perform “fuzzy comparisons” between your data and Deutsche Post Direkt’s reference data. In fuzzy comparisons, more than just the clearly defined deviations of hardness 1 are permitted. For example, with hardness 2 the system would correct the deviation in a postal code from 53114 (your data) to 53113 (Deutsche Post Direkt’s reference data). **Additional rules for house numbers** • With hardness 2, the ADDRESSFACTORY system essentially deals with changes to the numerical part of the house number in a conservative way. In the case of the entry “Daniel Müller, Hauptstraße 1”, the system would be more likely to query “Daniel**a** Müller, Hauptstraße 1” than “Daniel Müller, Hauptstraße **3”**. In other words, with this hardness a search is not performed for the individual in question in neighboring buildings. • However, changes to the house number suffix are permitted with hardness 2.
Hardness 3	Hardness 3 means “error-tolerant medium”. This hardness is even “softer” than hardness 2. For example, with hardness 3 the system would correct the deviation in a name from Sascha (your data) to Sarah (Deutsche Post Direkt’s reference data). **Additional rules for house numbers** • The system only makes changes to the *numerical* part of the house number where hardness 3 is set. Changes by +/ 1, 2 or 4 house numbers are permitted here. This house number range includes as a minimum the neighbors (up to two houses) and the neighbors on the opposite side of the street.

4.1.5.2 Correlation between degrees of correction and hardnesses

The hardnesses described above are also reflected in the status keys that the ADDRESSFACTORY system generates for each record that is compared (see Introduction to the ADDRESSFACTORY key system). There they merge into the “degrees of correction” that the system uses to describe the extent to which it has modified records or fields. The following table shows this correlation:

Hardness	Degree of correction
Hardness 0	Correct
Hardness 1	Corrected slightly
Hardness 2	Significantly corrected
Hardness 3	Significantly corrected

The system makes a distinction here between slight corrections and significant corrections. With slight corrections – which correspond to the relatively small amount of permitted changes of hardness 1 – it is assumed that they improve the address provided without having any impact on the delivery probability. With significant corrections, it is assumed that they improve the delivery probability.

4.1.5.3 Degrees of correction at field and record level

The degrees of correction described above can be used at two levels:

- At **field level**, the degree of correction describes the extent to which the system has corrected a field. Other fields of the same record are not taken into account here. This interpretation results directly from the hardnesses described above. For example, if “hauptstraße” is corrected to “Hauptstraße” this corresponds to hardness 1 and the degree of correction “corrected slightly” for the street field.
- At **record level**, the degree of correction describes how all the corrections that have been made to a record are to be evaluated altogether with regard to the record. This interpretation results from a set of weighting rules that are integrated into the ADDRESSFACTORY system.

Please note: The ADDRESSFACTORY *system defines the degree of correction of an entire record according to weighting rules that are based on the following principle:**Significant changes to a record are those that have an impact on the delivery probability.***

EXAMPLE: Where the address is changed from “Hauptstraße 2a” to “Hauptstraße 2”, the ADDRESSFACTORY *system classes the correction of the house number suffix from “a” to <leer> [<blank>] as a significant correction of the house number suffix field. However, as this correction does not have any significant impact on the delivery probability of the record, the system classes the record as a whole as being **corrected slightly**.*

The system uses the aforementioned weighting rules to deduce the degrees of correction of the whole record from the degrees of correction of all the fields. If the weighting rules deliver different degrees of correction at record level, the record is classed as the highest degree of correction delivered.

Example: The ADDRESSFACTORY *system corrects “Danie Müller, Hauptstraße 1A” to “Daniel Müller, Hauptstraße 1a”, i.e. it corrects the house number suffix slightly and the first name significantly. Overall, this results in a significant correction to the record as the significant correction to the first name is classed as a significant correction to the whole record. This even applies if a slight correction to the house number suffix is only classed as a slight correction at record level.*

4.1.5.4 Degrees of correction of enhancements and separations

As explained in the Activities section, in addition to straightforward corrections the ADDRESSFACTORY system also carries out enhancements and separations. Neither enhancements nor separations are classed as corrections at field level. In the evaluation of the record as a whole, the ADDRESSFACTORY system creates the following rules:

- **Separations** are generally classed as slight corrections at record level. The system follows the principle here that changes that do not have any impact on the delivery probability are classed as slight changes. The separation itself only ensures a more accurate distribution of information that is already known across the individual fields.
- In accordance with the weighting rules specified above, **enhancements** are classed as corrections at record level. Thus the enhancement of a town/city at record level is classed as a significant correction, while the enhancement of a house number suffix is classed as a slight correction at record level. The enhancement of the town/city suffix is not classed as a correction if no data has been provided for these fields and they have been added by the ADDRESSFACTORY system. Enhancements of political information are never classed as a correction.

Example: Classification of enhancements and separations

Input: Straße = “Hauptstraße 1”, PLZ = “53113” [Street = “Hauptstraße 1”, Postal code = “53113”]
Output: Straße = “Hauptstraße”, Hausnummer = “1”, PLZ = “53113”, Ort = “Bonn” [Street = “Hauptstraße”, House number = “1”, Postal code = “53113”, Town/city = “Bonn”]

In this example, the ADDRESSFACTORY system has separated the house number “1” from the street in the house number field. It has also enhanced the city “Bonn” based on the postal code. This results in a significant correction at record level, based on the enhancement of the town/city field. The separation of the house number, which would be classed as a slight correction at record level, cannot prevail in the classification in this case.

4.1.6 Fallback rules

The ADDRESSFACTORY system makes it possible to specify in all the relevant places the minimum and maximum level of detail you require. These restrictions enable you to rule out detailed or insufficiently detailed information from the provision of information. In both cases, you avoid obtaining information that is irrelevant as far as you are concerned but would nevertheless incur a charge.

Example: Exclusion of deliverability information

You provide records with complete names and addresses but only need information about whether the buildings assigned to these people actually exist. In this case, you can configure the PremiumDeliveryCheck (PDC) module in such a way that it does not attempt to detect deliverability information on individuals or households (see Records, levels and address types).

4.1.6.1 Comparison and fallback levels

The Records, levels and address types section describes the hierarchy level from the individual (most specific information) through the household and building to the street (most general information). Depending on the task, it enables you to declare various comparison modules and different sections of this hierarchy as interesting. The following concepts are key here:

- the **comparison level** – specifies the most specific information that is of value to you.
- the **fallback level** – specifies the most general information that is of value to you.

4.1.6.2 Logic of the fallback

The ADDRESSFACTORY system always starts the search for information with the most specific information in order to potentially be able to give a response with maximum information content. However, if the system is unable to provide a response at this level or the PremiumDeliveryCheck (PDC) module specifies non-deliverability, then (and only then) will the system search the more general levels in order to nevertheless be able to provide a response where possible. It does not stop this activity until it has not been possible to provide a response at the fallback level.

Example: Deliverability information at household level

You provide records with complete names and addresses, e.g. “Daniel Müller, Hauptstraße 1, 53113 Bonn”. Information about whether the household referred to in the record (in this case “Müller, Hauptstraße 1, 53113 Bonn”) is deliverable at the specified address will be sufficient for you. Neither the more specific information about “Daniel Müller, ...” nor the more general information about “Hauptstraße 1, ...” is of interest to you.

In this case, you can configure the PremiumDeliveryCheck (PDC) module in such a way that it selects the household level as the comparison level; you also specify the household level as the fallback level.

During a comparison of this type, the system skips the search for a specific individual, “Daniel Müller”, and attempts to merely establish the deliverability of the “Müller” household as the most specific information. If no information can be found on the household, the system *does not* attempt to find the next more general item of information (building). Setting the household level as the fallback level allows the search to end there.

Example: Telephone number search – success case

You provide records with complete names and addresses, and wish to have telephone numbers found for these records. The PhoneMatch (PHM) module enables you to specify whether you are just interested in telephone numbers for specific individuals or whether you are interested in telephone numbers for households as a fallback (i.e. “Müller, Hauptstraße 1, 53113 Bonn” instead of the more specific: “Daniel Müller, Hauptstraße 1, 53113 Bonn”). You select the individual level as the comparison level and the household level as the fallback level.

If the system finds a telephone number at the more specific individual level, it outputs this telephone number and ends its search. In this case, the more general household level is not checked further.

Please note: The PhoneMatch module allows the household level as the most general level as telephone number information for the (even more general) buildings and streets does not make sense in practical terms.

The examples provide you with an impression of the central principle of the fallback in the ADDRESSFACTORY system:

Please note: The ADDRESSFACTORY *system always begins its search for information, which could be present at several levels, at the comparison level – i.e. the most specific permitted level according to the comparison options. It falls back to more general levels as long as no information can be issued or non-deliverability is reported and it does not go beyond the fallback level that has been set.*

4.2 Modules and comparison settings

4.2.1 BasicAddressCheck (BAC)

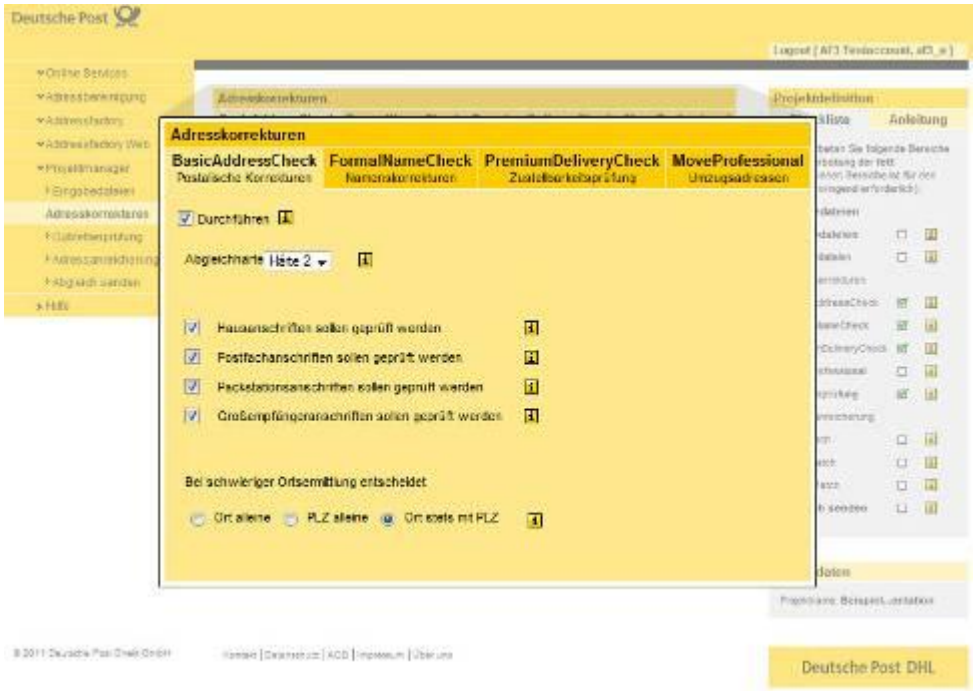
The basis for all Deutsche Post Direkt address comparison services is the BasicAddressCheck module. As all the other modules rely on the results of the BasicAddressCheck, it is compulsory to order this module.

The BasicAddressCheck checks the plausibility of your addresses in terms of the postal information: To this end, in every data record the following pieces of information: “PLZ” [“postal code”], “Ortsname” [“town/city name”] and “Straßenname” [“street name”] are compared against the current list of all postal codes, towns and cities and streets in Germany and the necessary corrections are carried out. As a general rule, the information on the recipient (surname, first name) is not included in this. The house number only comes into play if the street is located in several postal codes due to its length.

The full check and any correction to the postal plausibility are only carried out for addresses in Germany (including the Kleinwalsertal area that belongs to Austria). Addresses from foreign countries are only checked with regard to the combination of postal code and town/city name. If these two pieces of information match to 100%, we set the relevant country code as a free additional service. You can choose from different formats:

- ISO 3166, 2-digit
- ISO 3166, 3-digit
- UN KFZ
- IOC
- Official german shortform

All other foreign addresses are classed as “not plausible” and returned in their original form.



Module options	
Comparison hardness	• **Hardness 0** This setting does not allow any deviations: The address must be absolutely identical (spaces are also regarded as deviations). • **Hardness 1:** This setting allows small deviations and corrects these where applicable. Slight corrections are free of charge and include the following formatting/standardization: Adding or deleting spaces, converting umlauts, adding or deleting hyphens, upper/lower case, adding town/city suffixes, adding or removing brackets. • **Hardness 2:** This setting allows small deviations on an error-tolerant basis between the information provided by you and the information stored in the postal reference file and corrects these where applicable.
Comparison settings	• **Hausanschriften sollen geprüft werden [Street addresses should be checked]:** Plausibility check of street, postal code and town/city • **Postfachanschriften sollen geprüft werden [PO box addresses should be checked]:** Plausibility check of PO box postal code and town/city • **Packstationsanschriften sollen geprüft werden [Packstation addresses should be checked]:** Plausibility check of Packstation number, Packstation postal code and town/city • **Postfiliale Direkt – Anschriften sollen gerpüft werden [Postfiliale Direkt address should be checked]:** Plausibility check of post office number, Packstation postal code and town/city • **Großempfängeranschriften sollen geprüft werden [Bulk recipient's addresses should be checked]:** Plausibility check of bulk recipient's postal code and town/city
Comparison level	If the data records provided are of differing quality in terms of the postal codes and town/city names, it is recommended that the field that is of a generally better quality be marked beforehand. • **Ort alleine [Town/city alone]:** If towns/cities tend to be written correctly in the original data more frequently than postal codes, for example, then this button should be clicked on. • **PLZ alleine [Postal code alone]:** If postal codes tend to be written correctly in the original data more frequently than towns/cities, for example, then this button should be clicked on. • **Ort stets mit PLZ [Town/city always with postal code]:** If it is not possible to identify any difference in terms of quality in advance, this button should be clicked on.

4.2.1.1 Short spellings and long spellings

For town/city and street fields, the system delivers a record which provides postal information and which is generally always based on a long spelling. The system also provides a short spelling if this exists and if this differs from the long spelling. **After** the comparison, you can select whether you wish to have the town/city and street names returned in their complete (municipal) long form (max. 46 characters for street names and max. 40 characters for town/city names, e.g. “Franz-und-Johann-Wallach-Str.” or “06556 Mönchpfiffel-Nikolausrieth”) or as the abbreviated variant in the short form (max. 22 characters for street names and max. 24 characters for town/city names, e.g. “Frz-u-Joh-Wallach-Str” or “06556 Mönchpfiffel-Nikolausrh”).
Umlauts and the ß symbol are classed as two characters (e.g. ß = ss, ü = ue). The short form of the town/city name above, Mönchpfiffel-Nikolausrh, is therefore output with 23 characters since the letter ö stands for two characters (oe). The same applies to street names. The short form of A-v-Droste-Hülshf-Str is output with 21 instead of 22 characters (ü = ue).
These abbreviated forms are not “official” abbreviations but can be processed in all Deutsche Post systems smoothly and without any problems, and are also the most widespread and widely accepted abbreviations.

4.2.1.2 House number separation and checking

BasicAddressCheck simply performs the postal check of the addresses entered. To this end, in every data record the following pieces of information: “PLZ” [“postal code”], “Ortsname” [“town/city name”] and “Straßenname” [“street name”] are compared against the current list of all postal codes, towns and cities and streets in Germany and the necessary corrections are carried out.

Please note: BasicAddressCheck does not check the house numbers of the records entered. For this reason, confirmation of an address by the BasicAddressCheck does not necessarily mean that the building entered actually exists. In most cases, however, the BasicAddressCheck is able to separate out the house numbers and house number suffixes which you enter in the street field and transfer them to the correct fields. However, it does this purely using its own knowledge of the streets in Germany and the general appearance of house numbers.

In order to check the existence of buildings and the correctness of house numbers relative to the name entered, please also use the FormalNameCheck and PremiumDeliveryCheck modules.

4.2.1.3 Postal checking of PO boxes and Packstations

BasicAddressCheck can accept PO box addresses and Packstation addresses and check them as regards the postal details. In so doing, in the same way as for street addresses, the consistency of the

- PO box number, postal code and town/city, or
- Packstation number, postal code and town/city
- post office number (Postfiliale Direkt), postal code and town/city

is checked without also checking

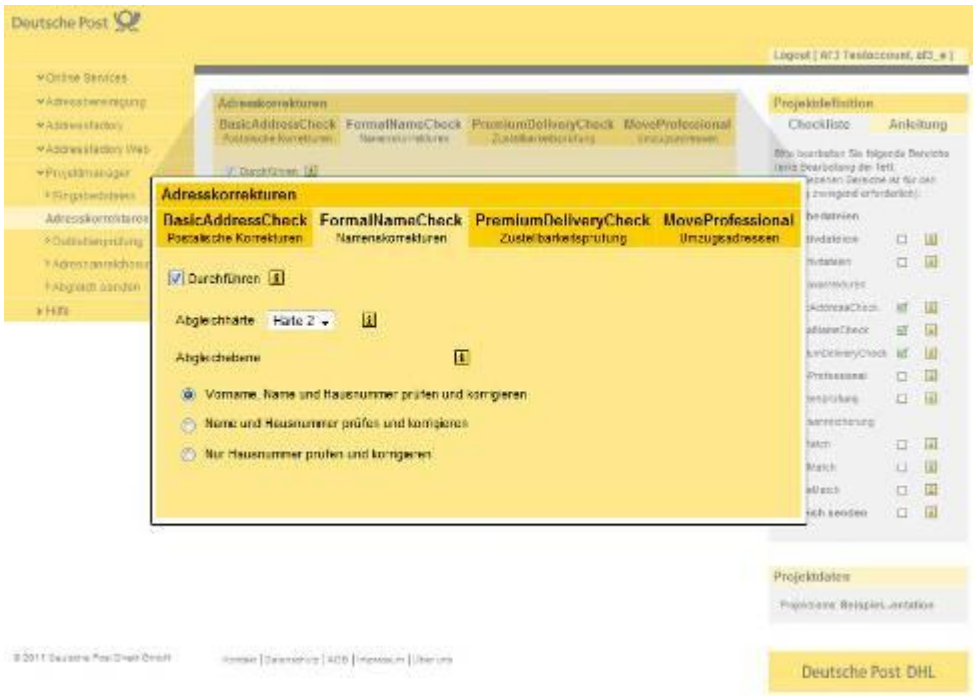
- whether the individual specified has rented the PO box or
- is using the specified Packstation.
- uses the post office stated.

Those address types can also be supplied and checked in parallel to street addresses if you know more than one address for an individual.

4.2.2 FormalNameCheck (FNC)

With the **FormalNameCheck** module, the spelling of the first name, surname and house number is compared against Deutsche Post Direkt's postal file and corrected where requested. Titles and forms of address are also added and company addresses are identified. The preceding check in the **BasicAddressCheck** module ensures that the postal address is plausible.

Please note: The core competence of Deutsche Post Direkt covers both the available reference data and also the algorithms used to check private addresses. The processing of institutional addresses (companies, authorities, etc.) in the FormalNameCheck module could therefore produce undesired results (e.g. the provision of information on the private individual instead of the doctor's surgery forming the subject of the inquiry, etc.).
In order to rule out these effects as far as possible, prior to processing in the FormalNameCheck module potential institutional addresses are detected through the identification of legal forms (e.g. "GmbH" ["Ltd."], "AG" ["plc."], "oHG" ["partnership"], etc.) and with the help of key terms (e.g. "Praxis" ["surgery"], "Lackiererei" ["paint shop"], etc.) and specifically marked as such. The further processing of these addresses therefore only takes place at building level in the PremiumDeliveryCheck module. There is no processing by the MoveProfessional module.



Module options	
Comparison hardness	• **Hardness 0** This setting does not allow any deviations; the address must be absolutely identical to the postal reference file (spaces are also regarded as deviations). • **Hardness 1:** This setting allows small deviations and corrects these where applicable. Slight corrections are free of charge and include the following formatting/standardization: Adding or deleting spaces, converting umlauts, adding or deleting hyphens, upper/lower case, adding town/city suffixes, adding or removing brackets. We particularly recommend this setting for sensitive address data (e.g. if you wish to send account statements). • **Hardness 2:** This setting allows small deviations on an error-tolerant basis between the information provided by you and the information stored in the postal reference file and corrects these where applicable. In this case, a correction is only made to the first name and surname if the town/city, postal code, street name and the numerical part of the house number match 100%. • **Hardness 3:** This setting allows larger deviations on an error-tolerant basis between the information provided by you and the information stored in the postal reference file and corrects these where applicable. We recommend this setting if you wish to have data for a mailing to prospects checked, for example. In this case, a correction is made to the first name and surname if the house number potentially differs slightly but the street name, postal code and town/city match 100%.
Comparison level	You specify the level (individual, household, building) at which corrections should be carried out by activating the comparison level. Please note: Corrections are only carried out if the individual forming the subject of the inquiry has been identified in the postal reference file. • **Vorname, Name und Hausnummer prüfen und korrigieren [Check and correct first name, surname and house number]:** With this setting, you ask us to always return the information stored in the postal reference file in relation to the individual (first name, surname and/or house number) and to also change your original information accordingly where applicable. These changes also include the addition of a first name if only an initial was provided, for example. If the data record cannot be found or cannot be unequivocally found, we will of course not make any changes. • **Name und Hausnummer prüfen und korrigieren [Check and correct surname and house number]:** With this setting, you ask us to always return the information stored in the postal reference file in relation to the household (surname and/or house number) and to also change the information you sent us accordingly where applicable. The first name

	provided by you will not generally be changed with this setting. If the data record provided cannot be found or cannot be unequivocally found, we will of course not make any changes. • **Nur Hausnummer prüfen und korrigieren [Only check and correct house number]:** With this setting, you ask us to always return the information stored in the postal reference file in relation to the building (house number) and to also change the information you sent us accordingly where applicable. The name elements (first name and surname) provided by you will not generally be changed with this setting. If the data record provided cannot be found or cannot be unequivocally found, we will of course not make any changes.

4.2.2.1 Notes on form of address/title

- The following forms of address are enhanced by us: “Herr” [“Mr.”], “Frau” [“Mrs.”].
- The following titles are enhanced by us: academic titles such as “Dr.”, “Prof. Dr.”, “Prof.”, etc.
- As a general rule, the following are not enhanced: university degrees (e.g. “Dipl.-Ing.” [degree in engineering]) or other (honorary) titles (e.g. “Exzellenz” [Excellency]) and professional titles (e.g. “Malermeister” [master painter]).
- If you provide your own fields with forms of address or titles, these fields will be corrected according to (potentially deviating) entries in the postal reference file. Where no information on forms of address and titles exists in the postal reference file, the forms of address and titles you have provided will remain unchanged.

4.2.2.2 Examples of name corrections

Comparison hardness: 2, comparison level: Vorname, Name und Hausnummer prüfen und korrigieren [Check and correct first name, surname and house number]:

Data record provided	Hegla Mustermann, Musterstr. 15, 12345 Musterhausen
Entry in the postal reference file	Helga Mustermann, Musterstr. 15, 12345 Musterhausen
Result data record:	Helga Mustermann, Musterstr. 15, 12345 Musterhausen

Reasons: The item of information “Hegla” cannot be found in the reference database. However, as the comparison hardness 2 was selected, the requested correction is carried out on the basis of the entry in the postal reference file.

Comparison hardness: 0, comparison level: Vorname, Name und Hausnummer prüfen und korrigieren [Check and correct first name, surname and house number]:

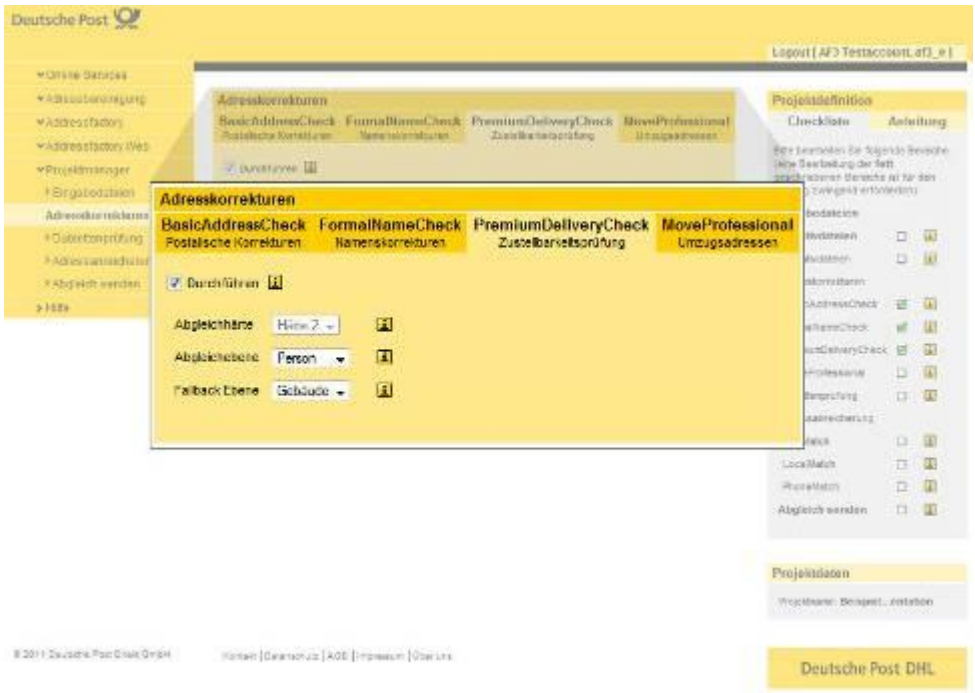
Data record provided	Hegla Mustermann, Musterstr. 15, 12345 Musterhausen
Entry in the postal reference file	Helga Mustermann, Musterstr. 15, 12345 Musterhausen
Result data record:	Hegla Mustermann, Musterstr. 15, 12345 Musterhausen

Reasons: The item of information “Hegla” cannot be found in the postal reference file. As the comparison hardness 0 was selected in this case, *no correction is carried out here.*

Note: Please note that ADDRESSFACTORY can only compare individual people and not personal partnerships (e.g. Helga and Peter Mustermann) as the comparison is carried out against a database of individuals. If personal partnerships appear in a field, the names will not be identified correctly in some cases or some names or name elements may be deleted. To avoid introducing errors here, we would like to ask you to separate personal partnerships where possible or not to request a comparison of personal partnerships.

4.2.3 PremiumDeliveryCheck (PDC)

With the **PremiumDeliveryCheck** module, you can compare your addresses against Deutsche Post Direkt's postal reference file and identify non-deliverable addresses at individual, household and/or building level.



Module options	
Comparison hardness	The comparison hardness corresponds to the hardness selected in the **FormalNameCheck** module. • **Hardness 0** This setting does not allow any deviations; the address must be absolutely identical to the postal reference file (spaces are also regarded as deviations). • **Hardness 1:** This setting allows small deviations. • **Hardness 2:** This setting allows small deviations on an error-tolerant basis between the information provided by you and the information stored in the postal reference file. • **Hardness 3:** This setting allows bigger deviations on an error-tolerant basis between the information provided by you and the information stored in the postal reference file.
Comparison level	The comparison level defines the primary level at which the deliverability check should be carried out. • **Individual:** You have the option of performing a deliverability check at individual level; for this the first name, surname and house number must be marked as deliverable in the postal reference file. • **Household:** You have the option of performing a deliverability check at household level; for this the surname and house number must be marked as deliverable in the postal reference file. • **Building:** You have the option of performing a deliverability check at building level; for this the house number must be marked as deliverable in the postal reference file.
Fallback level	If the information being searched for is not found in the comparison against the postal reference file, the fallback level determines which reduced information should be searched for in a second or third step. • **Individual:** Select this setting if you only wish to search at individual level without a fallback to the household or the building. • **Household:** You have the option of either searching for the household in a second step (fallback from the individual level) or only carrying out a comparison at household level (for this the household must be specified in the comparison level). • **Building:** Select this setting if you wish to search for the building in a subsequent step (fallback from the individual level or the household level).

4.2.3.1 Examples with regard to the comparison levels

Comparison level individual, fallback level individual
Here you are only searching for deliverable individuals. This setting is recommended for sensitive address data for which only deliverable individuals should be found.

Comparison level individual, fallback level household
Here you are searching for deliverable individuals in a first step. If these are not contained in our postal reference file, a check is carried out in a second step as to whether there is any up-to-date information on the household (another individual with this surname). In on our experience, this setting is ideally suited to finding as many deliverable individuals and households as possible for a mailing.

Comparison level household, fallback level household
Here you are only searching for deliverable households. This setting is recommended where a catalog is to be sent to each household, for example.

Comparison level individual, fallback level building
Here you are searching for deliverable individuals in a first step, for a deliverable household in a second step and, in a third step, the system checks whether the building is deliverable or whether it exists. If a building is found, this does not, however, say anything about the deliverability of an individual or a household.

4.2.3.2 Notes on the logic of the fallback levels

In the setting of the comparison and fallback levels, priority is given to the most specific level (individual) over the most general level (building).

Thus, deliverability is first searched for at individual level. If there are no hits here with regard to deliverability or there is no information on the individual, the next level that was specified will be searched, i.e. the household level. If there is no information on the household here either, or the household is reported as non-deliverable, the search will be continued at the most general level, the building level.

Thus a deliverable building *does not* pose a contradiction to a non-deliverable individual or a non-deliverable household as this general information only states that the building forming the subject of the inquiry exists.

4.2.3.3 Prioritization of multiple address types

In theory, the ADDRESSFACTORY system can receive up to four address types in parallel in one data record (see also Records, levels and address types). If you define multiple address types (e.g. street and address and PO box address), the system provides information on which address is deliverable. If at least one address type is deliverable, the record concerned will generally be reported as deliverable, **even if the other address type is reported as non-deliverable or unknown.**

4.2.3.4 Examples with regard to deliverability

Data record provided	Peter Müller, Musterstr. 15, 12345 Musterstadt
Entry in the postal reference file	Peter Müller, Musterstr. 15, 12345 Musterstadt – unzustellbar [non-deliverable]
Result data record:	Peter Müller, Musterstr. 15, 12345 Musterstadt – **Person unzustellbar [individual non-deliverable]** (PDC050106)
Data record provided	Peter Müller, Musterstr. 15, 12345 Musterstadt
Entry in the postal reference file	Peter Müller, Musterstr. 15, 12345 Musterstadt – zustellbar [deliverable]
Result data record:	Peter Müller, Musterstr. 15, 12345 Musterstadt – **Person zustellbar [individual deliverable]** (PDC050105)
Data record provided	Peter Müller, Musterstr. 15, 12345 Musterstadt
Entry in the postal reference file	Silke Müller, Musterstr. 15, 12345 Musterstadt – zustellbar [deliverable]
Result data record:	Peter Müller, Musterstr. 15, 12345 Musterstadt - **Haushalt zustellbar [household deliverable]** (PDC040105)
Data record provided	Peter Müller, Musterstr. 15, 12345 Musterstadt
Entry in the postal reference file	Silke Müller, Musterstr. 15, 12345 Musterstadt – unzustellbar [non-deliverable]
Result data record:	Peter Müller, Musterstr. 15, 12345 Musterstadt – **Haushalt unzustellbar [household non-deliverable]** (PDC040106)

4.2.4 MoveProfessional (MOV)

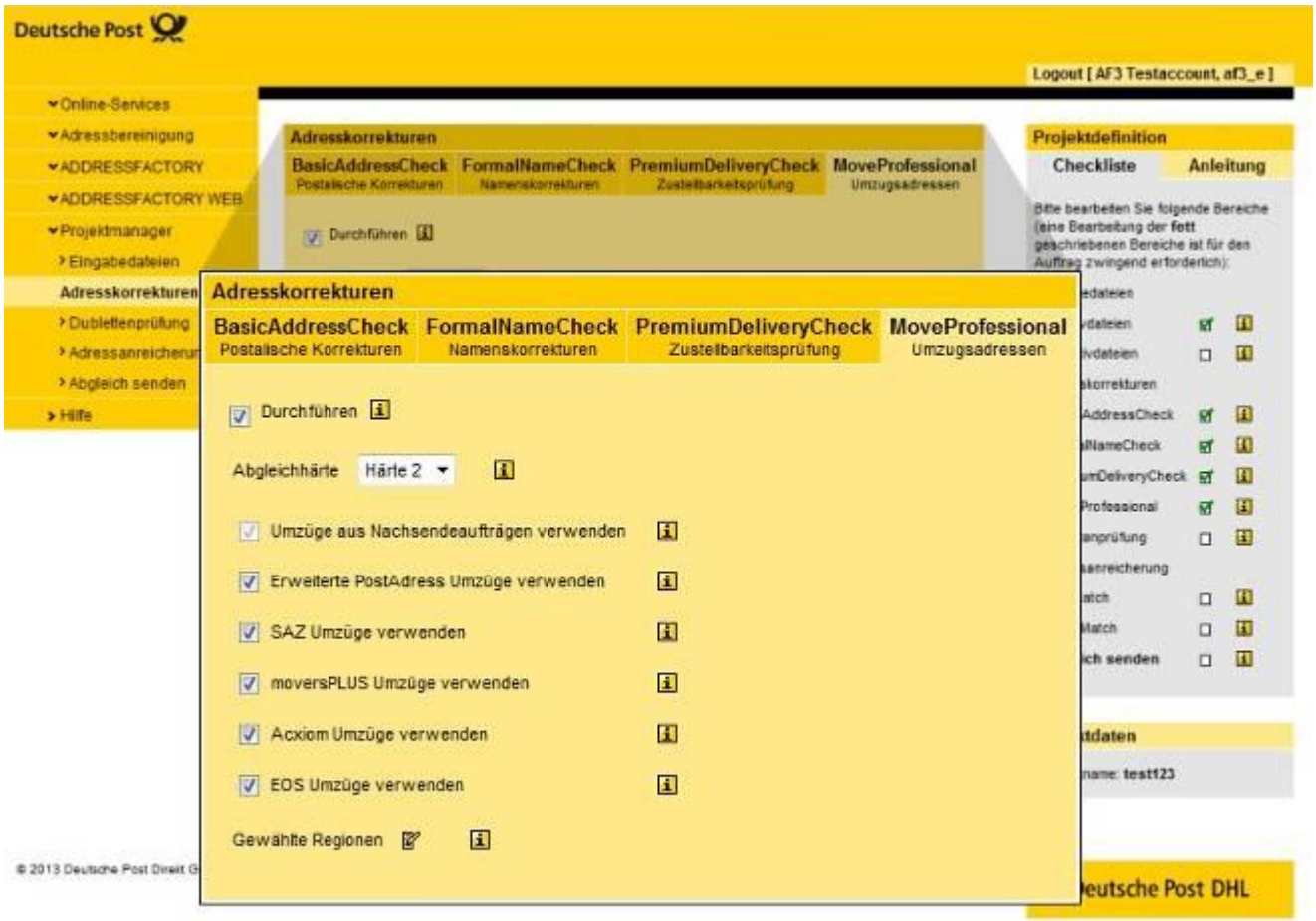
Addresses are checked with the **MoveProfessional** module and enhanced with relocation addresses, if these are known, and released for forwarding purposes.

This is based on the relocation information from redirection requests. As a general rule, a redirection request is valid for 6 months. For the MoveProfessional service, the relocation addresses are even available for a total of 24 months. Within this time period, series of relocations (‘chain relocations’) are also documented whether there is a complete relocation history.

If desired, we can supply you with relocation information from additional sources (extended relocations from Deutsche Post Adress and/or SAZ) which come from the individual relocating or from publicly accessible directories.

Each relocation address is transferred to the database once it has been qualified accordingly. All the sources for our relocation addresses are checked in accordance with data protection law and fulfill the requirements of the Federal Data Protection Act (BDSG).

Please note that you can only select the MoveProfessional module in conjunction with the PremiumDeliveryCheck module.



Module options	
Hardness	
Comparison hardness	• **Hardness 0:** This setting does not allow any deviations; the address must be absolutely identical to the postal reference file (spaces are also regarded as deviations). • **Hardness 1:** This setting allows small deviations. • **Hardness 2:** This setting allows small deviations on an error-tolerant basis between the information provided by you and the information stored in the relocation database. • **Hardness 3:** This setting allows bigger deviations on an error-tolerant basis between the information provided by you and the information stored in the relocation database.
Relocation sources	
Use relocations from redirection requests	Here you can find relocation addresses from Deutsche Post redirection requests that have been released for forwarding purposes (last 24 months).
Use the extended PostAdress substance	The 'supplementary relocations' from the PostAdress substance come from public sources, from PostAdress cooperation partners and from the individuals who are relocating themselves. When selecting the relocation information, the same high quality standards are applied as with the data from the redirection process. For each piece of supplementary relocation information PostAdress also stores the source so that the origin of the data can be verified at any time. At present there are approx. 1 million supplementary relocations in the extended PostAdress substance.
Use moversPLUS relocations	moversPLUS is supplementary relocation information from Deutsche Post Adress. The relocation addresses are collected by maintaining household databases and cooperations with partner companies. In total, moversPLUS includes over 5 million items of relocation data. Every year the database grows by 1 to 1.5 million addresses.
Use Acxiom relocations	The Acxiom change of address information is based upon the Acxiom household database and, by intelligently integrating all available information regarding an undeliverable address, it is assigned clearly to a current address in a predefined area or, if additional information is available, also to an area beyond. It is therefore possible to identify relocation addresses from longer ago and obtain a new address.
Use SAZ relocations	In addition to the relocation addresses from the SAZ database, publicly accessible directories, and other renowned partners from the world of publishing and debt collection, relocation information from telecommunications and residents' registration office information is also integrated here. The relocation information is systematically checked for deliverability. The SAZ relocation addresses are marked by their very high level of quality and perfectly complement the data from redirection requests or supplementary relocations.

Use EOS relocations	EOS relocations are generated from publicly available sources, own research and information provided by those relocating.
Further options	
Selected regions	This option is used to limit the relocation area to your defined regions. You can limit the area based upon routing zones, routing regions and postcodes. To do this, upload a TXT or CSV file with the required information (below each other).

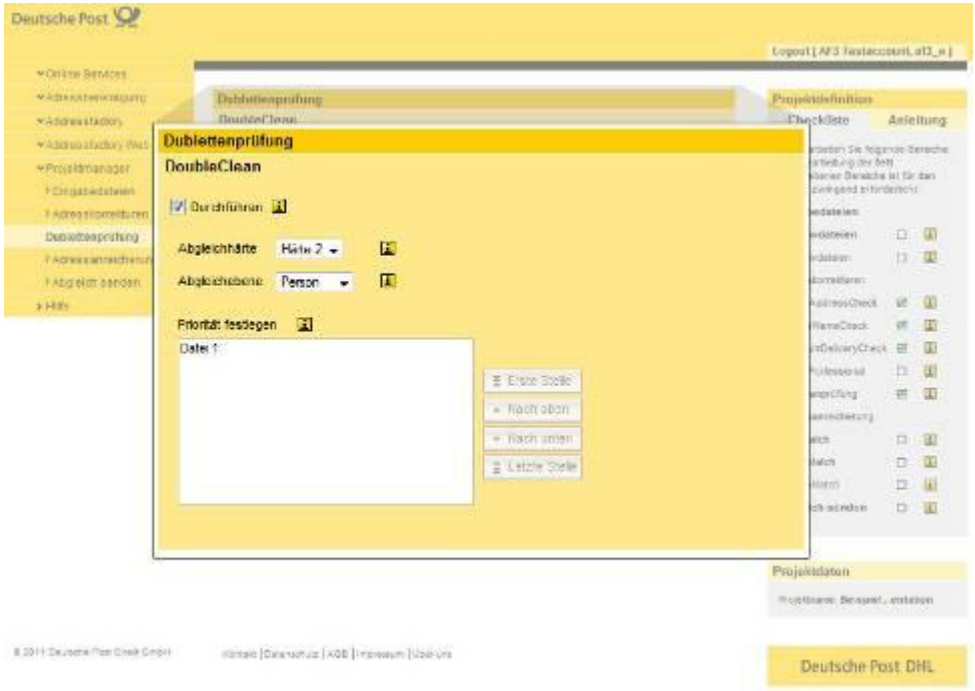
Note: Relocation addresses may include both international relocations and relocations to new developments, residential homes, etc. In this case, we copy across all the information as it is sent to us by the customer, even if the structure of the addresses is not consistent with our routing data reference. Based on our experience, company names such as "Mallorca" ["Majorca"] or "Amerika" ["America"] may appear here.

Our recommendation for MoveProfessional: If you are comparing sensitive data (e.g. from the financial services sector, etc.) we recommend only using addresses from the redirection process as these are the addresses where the best level of checking has been carried out (checked and approved by the customer himself). If you are processing prospects' addresses, it is recommended to also enhance extended relocations in order to find as many addressees as possible.

4.2.5 DoubleClean (DUB)

With the **DoubleClean** module, you have the ability to have duplicates that may be contained in your address database found and identified.
For this purpose, you can choose from several different options for finding duplicates.

Please note: If you include several files within a project, you can only select one comparison level and comparison hardness for your files. The arrow buttons on the button bar can be used to alter the order of the files within the project and thus the file priority.



Module options	
Comparison hardness	• **Hardness 0:** This setting does not allow any deviations; the address must be absolutely identical to the previous duplicate (spaces are also regarded as deviations). • **Hardness 1:** The following deviations are allowed during the detection process: umlauts written in a different way, change of case (upper/lower case), different order of words within a data field. Titles and suffixes may differ but all surnames (even in the case of double-barreled names) must match. The town/city, street and the numerical part of the house number must always match. • **Hardness 2:** The following deviations are allowed during the detection process: umlauts written in a different way, change of case (upper/lower case), different order of words within a data field and potentially one to two wrong characters if the total number of deviations does not become too large as a result. The town/city, street and the numerical part of the house number must always match. • **Hardness 3:** The following deviations are allowed during the detection process: missing, incorrect or rotated characters, umlauts written in a different way or phonetic substitution, change of case (upper/lower case), different order of words within a data field. It is sufficient to have a matching first name together with a matching surname in order to identify a duplicate; a matching initial together with a matching first name will also result in a duplicate. However, if all the names are completely identical, the house numbers may differ slightly within the street.
Comparison level	• **Individual:** This setting finds duplicates at individual level. For this, the first name and surname and the numerical part of the house number must match. • **Household:** This setting finds duplicates at household level. For this, the surname and the numerical part of the house number must match. • **Building:** This setting finds duplicates at building level. For this, the numerical part of the house number must match.
File priority	If you wish to have several files processed at the same time, you must define file priority. To do this, you move the file with the highest priority to the top position in the preview window. Please use the relevant buttons for this. The higher a file is in the list, the higher its priority. Hits from negative lists or the Robinson list automatically have a high level of priority. The first data record of a duplicate found as a result of this priority level is described as a header duplicate and all other duplicates belonging to this header duplicate successive duplicates. Negative files always given the identification for the header duplicate as a priority.

Note: In the DoubleClean module, all addresses are checked but company addresses can generally not be detected as duplicates. If you do still want to have your company addresses cleansed, we can offer you other options. Speak to a Deutsche Post Direkt employee. We will be pleased to assist you further

4.2.6 GeoMatch (GEO)

With the **GeoMatch** module, you can request that your addresses be enhanced with geographic coordinates. . Here you can choose between exact location co-ordinates and interpolated coordinates.

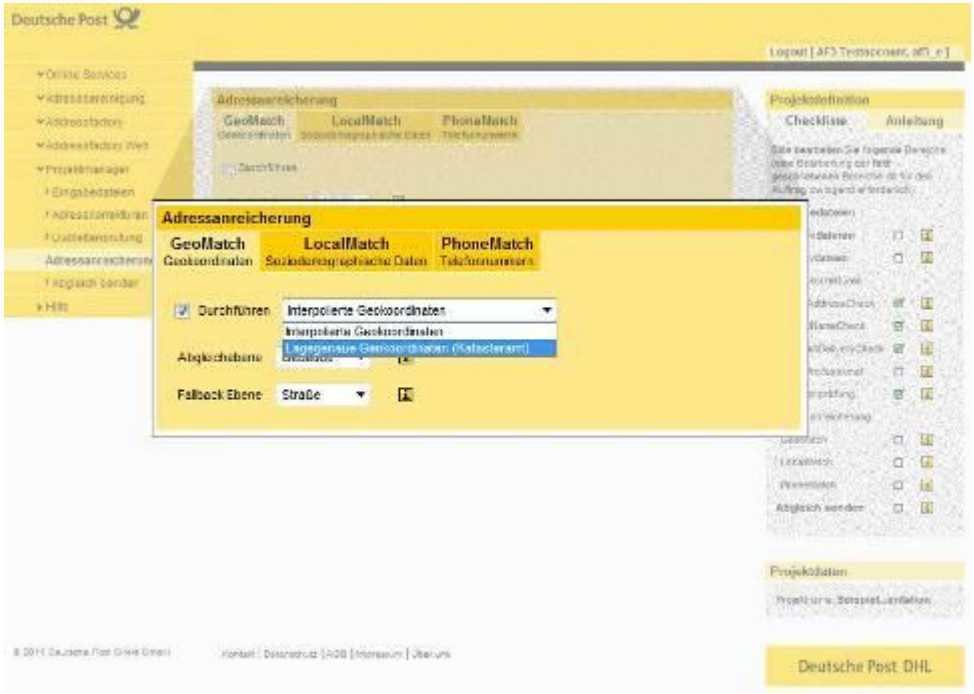
In urban areas and city centres the interpolated co-ordinates are of a good quality. Co-ordinates are obtained on the basis of a mathematical model, where the number of buildings is distributed uniformly along the length of a road. We have co-ordinates at the building level in our reference system for almost all postal addresses. New addresses are added constantly to our database via the postal reference file. With interpolated co-ordinates and with a homogeneous row of buildings the correct building is usually found. In the case of building irregularities along the road (e.g., gaps between buildings, small parks, playgrounds etc.) the real location of a building in an area may not quite match the calculated position. Depending on the intended use of the building co-ordinates, the accuracy of the scale-dependent generalisation does not matter. If we cannot geo-reference an address with building co-ordinates, our fallback mechanism applies automatically, unless you request otherwise. This provides you with the next best co-ordinates that we currently have for the address. These are the middle of our streets or, alternatively, the centre of the postcode.

Application examples: planning advertising means, calculating catchment areas, selecting areas.

Exact location co-ordinates, measured officially for each individual building by cadastral authorities, are even more precise. The source of the house co-ordinates is the surveying authorities of the Länder (German federal states), which keep a record of all plots of land and buildings in Germany. Exact location co-ordinates provide a building's precise co-ordinates.

Application examples: routing, navigation.

The following cartographic projections are available to you. Geographic longitude and latitude (WGS84), UTM coordinate system (easting, northing, WGS84), Gauß-Krüger coordinate system (easting/northing). As a general rule, all projections will be enhanced initially. With the results file, you can select which projection you require.

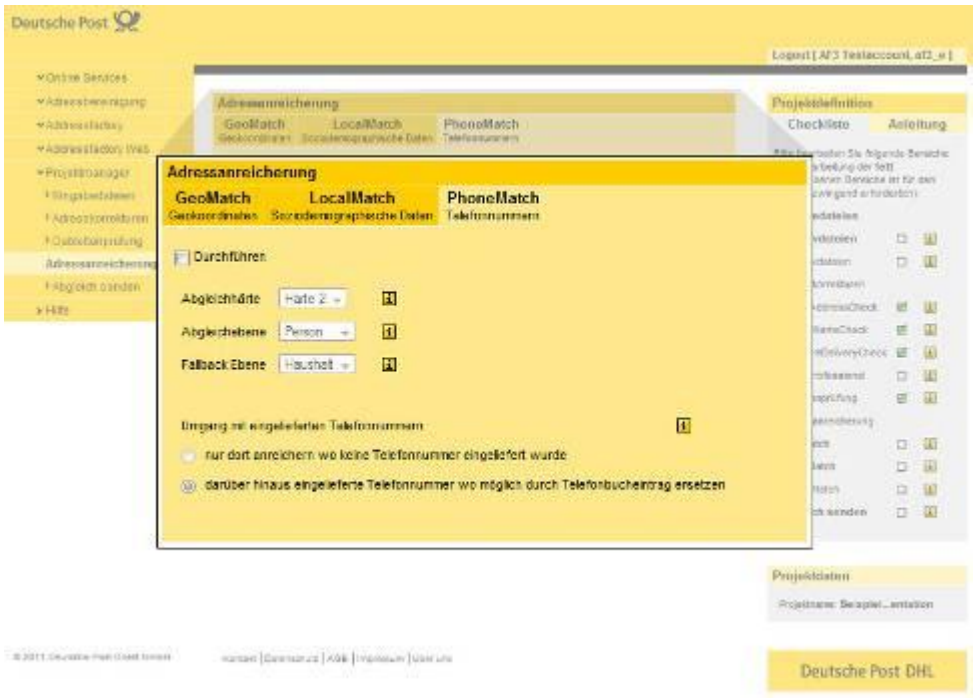


Module options for interpolated building coordinates	
Comparison level	• **Building:** This setting provides the coordinates at building level for your addresses. • **Street:** This setting provides the coordinates at street level for your addresses.
Fallback level	If the information being searched for is not found in the comparison against the postal reference file, the fallback level determines which reduced information should be searched for in a second step. • **Building:** Select this setting if you only wish to have coordinates enhanced at building level without a fallback to the street level. • **Street:** Select this setting if there are no coordinates for the building specified by you and you wish to at least have coordinates enhanced at street level as a fallback.

4.2.7 PhoneMatch (PHM)

With the PhoneMatch module you enhance your addresses with telephone numbers. This enables you to personally contact your customers and strengthen the customer relationship through direct discussions. We supply the corresponding telephone numbers for your addresses at both household and individual level. We also offer you the option of not just adding available telephone numbers but also replacing your existing telephone numbers on the basis of the entries in the telegate Media AG database

We also return the telephone numbers to you in a uniform structure (e.g. in one column with separators (hyphens, spaces or slashes) or separated with the area code and telephone number in separate columns). On average, approx. 40–50% of data records can be enhanced at individual and household level.



Module options	
Comparison hardness	• **Hardness 0:** This setting does not allow any deviations between the information provided by you and the information stored in the telephone directory; the information must be absolutely identical. • **Hardness 1:** This setting only allows comparatively small deviations between the information provided by you and the information stored in the telephone directory. • **Hardness 2:** This setting allows deviations between the information provided by you and the information stored in the telephone directory to what we deem an optimum extent based on experience. • **Hardness 3:** This setting allows comparatively large deviations between the information provided by you and the information stored in the telephone directory.
Comparison level	• **Individual:** You have the option of enhancing a telephone

	number at individual level. For this, the relevant individual must be entered in the telephone directory. • **Household:** You have the option of enhancing a telephone number at household level. For this, an individual of the relevant household (e.g. husband or wife) must be entered in the telephone directory.
Fallback level	• **Individual:** Select this setting if you only wish to have telephone numbers enhanced at individual level without a fallback to the household. • **Household:** Select this setting if you wish to have telephone numbers enhanced at household level in a subsequent step if there is no entry in the telephone directory for the individual forming the subject of the inquiry.
How to deal with telephone numbers provided	• **nur anreichern [enhance only]:** With this setting, the telephone numbers are either enhanced in a new field or are written to a column defined beforehand as the telephone numbers column. If you have already listed telephone numbers in a column, these will not be overwritten provided that the system recognizes these as telephone numbers (the system recognizes a sequence of numbers as a telephone number; a single number, a letter or a special character will not be treated as a telephone number and may be overwritten). • **auch ersetzen [replace too]:** With this setting, the telephone numbers are enhanced in a column defined by you (see the section on checking the input data). If there are not yet any telephone numbers in that column, in the event of a hit a telephone number will be added, otherwise existing telephone numbers will be checked and potentially replaced according to the datagate GmbH database.

Note: Telephone numbers are also enhanced for non-deliverable addresses and also for unknown addressees if the full names have been filled in (as a comparison is performed here using the names in the database entries of datagate GmbH). Telephone numbers are not enhanced for foreign addresses, companies that have been identified and addresses that cannot be corrected from a postal perspective.

With the telephone numbers, we distinguish between types of telephone numbers (cell phone number, landline number, etc.) using a professional key system. Only the first telephone number in our data will be returned.

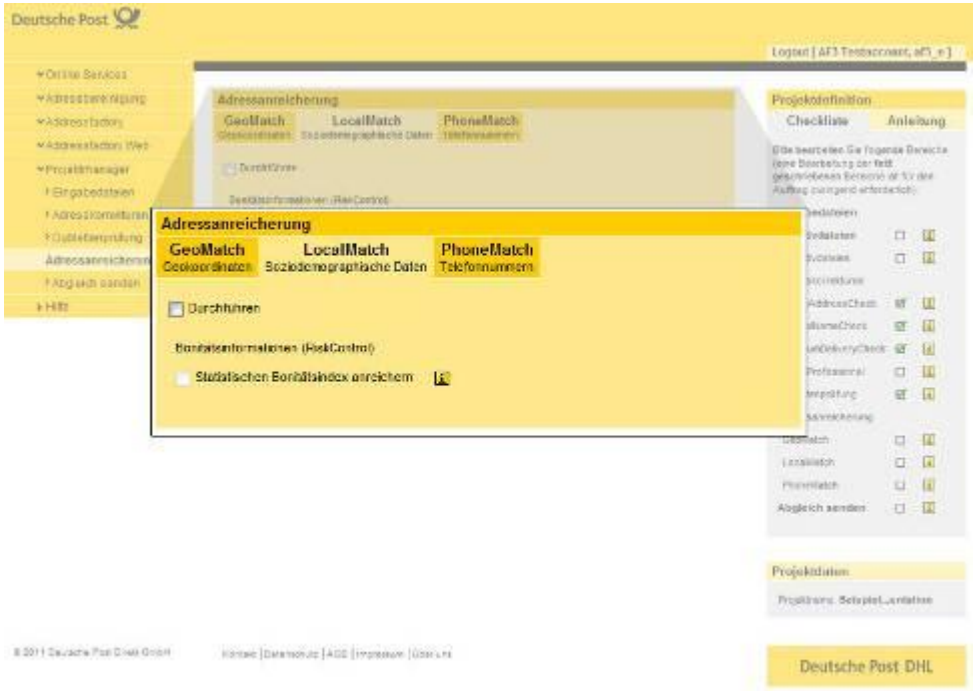
Please note: In general, we recommend that you only add the enhanced telephone numbers, but do not under any circumstances overwrite other telephone numbers stored in your system as these numbers may enable you to contact the addressee more easily (e.g. mobile communications or business line) than the private line.

4.2.8 LocalMatch (MDL)

The LocalMatch module is an address enhancement module that you can use to enhance your data with socio-demographic information. The **LocalMatch** module currently only contains the **RiskControl** products from Deutsche Post Direkt.

Use **RiskControl** to estimate the risk of non-payment on the basis of statistical probabilities using the *credit rating index*. This enables you to avoid sending advertising material to undesirable respondents, for example, and optimize the costs for marketing measures. Even with a low rate of non-payments, the success of a campaign will be considerably reduced. With ADDRESSFACTORY DIRECT, you also have the option of a *personal credit check* based on personal data from InfoScoreConsumerDaten GmbH. The condition for the use of this information is a separate subscriber agreement and a legitimate and verifiable interest.

RiskControl is intended for use as part of marketing or sales activities, such as advertising scoring. Its use in risk management is not allowed. Customers or prospects should not be refused services on the basis of this information.



Module options	
Statistischen Bonitätsindex anreichern [Enhance statistical credit rating index]	• In order to provide a quick overview, the score values are simply presented as “school grades”: • Values between 5.0 and 6.0 indicate a high probability of non-payment. • Between 2.5 and 4.9 there is a medium to increased probability. • A low non-payment risk is indicated with values up to a maximum of 2.4.
Personenbezogene Bonitätsinformationen (Infoscore) [Personal credit rating information (Infoscore)]	InfoScore Consumer Data’s personal credit rating information is also available to you for the ADDRESSFACTORY DIRECT product variant. The condition for the use of this information is a legitimate and verifiable interest and a separate subscriber agreement.

4.2.9 FileMatch (NEG)

The FileMatch module offers you the option of carrying out comparisons against predefined negative lists. Data records that are present in the relevant file are flagged accordingly. You can then not include them in a mailing, for example.

The following negative lists are currently available to you:

- **DDV Robinson list:** “The Robinson list is a non-profit organization that has set itself the goal of protecting consumers from unwanted marketing. To this end, users are offered the option of entering their details in the blacklist free of charge. The entries stored in this list can then be used by reputable companies for encrypted comparison against mailing lists or marketing lists, in order to delete undesirable contact details.” (Extract from www.robinsonliste.de)

- **Fake names list:** The fake list is a negative file that is predefined in ADDRESSFACTORY and against which you can check your data. The outcome of this check is the information, for each record provided, about whether this record is also contained in the file. The fake list contains names that are extremely likely to have been made up. This includes names of cartoon characters (“Donald Duck”), names of public figures (“Robert Redford”) and frequently used pseudo names (“Hans Mustermann” [John Smith/Sam Sample]). You can use this function in conjunction with ADDRESSFACTORY DIRECT during the address generation stage in order to identify possible problem cases in good time.

You can of course also use your own negative lists. However, these would then have to be imported into the DoubleClean module as negative files.

If you wish to carry out comparisons against a predefined negative list or against a negative list of your own, please add an additional file as a negative file under “Eingabedateien” [“input files”]. You now have the option of uploading one of your own files or using one of the aforementioned predefined files.

4.3 Key system

4.3.1 Introduction to the ADDRESSFACTORY key system

Result data of the ADDRESSFACTORY does not only contain the corrected versions of your data. As a general rule, for each record you will also be provided with information about the changes that the system has made to your data or the statements that the system can make with regard to your data.

The ADDRESSFACTORY system encodes these statements in short sequences of letters and numbers that are referred to as *status keys* (or *keys* for short). Using these status keys, it is possible for the human reader to identify the changes that have been carried out. The status keys are also suitable for further automatic processing, e.g. in order to only re-import those records that have also actually been changed back into your database.

4.3.1.1 Structure of the keys

4.3.1.1.1 Basic structure

As a general rule, status keys of the ADDRESSFACTORY system are nine digits long and consist of three blocks of three characters:

- **Characters 1-3:** Module: **Where does the information come from?**
- **Characters 4-6:** Level, field or address type? **What is being talked about?**
- **Characters 7-9:** Status: **What is being stated?**

All level, field, address type and status values are used consistently here. The principle can be explained by means of a number of examples:

- **BAC010103** (= BAC / 010 / 103): The “BasicAddressCheck” (BAC) module has made a “signifikante Korrektur” [“significant correction”] (103) to the “Hausanschrift” [“street address”] address type (010) in this record. The following key, which was delivered in parallel, sets out this statement in further detail.
- **BAC100103** (= BAC / 100 / 103): The “BasicAddressCheck” (BAC) module has made a “signifikante Korrektur” [“significant correction”] (103) to the “Postleitzahl (Hausanschrift)” [“Postal code (street address)”] field (100) in this record. Please note that the “signifikante Korrektur” [“significant correction”] status (103) is used consistently in both keys.
- **BAC010107** (= BAC / 010 / 107): The “BasicAddressCheck” (BAC) module has carried out an “Anreicherung” [“enhancement”] (107) with regard to the “Hausanschrift” [“street address”] address type (010) in this record. Here too the following key sets out the statement in further detail.
- **BAC104107** (= BAC / 104 / 107): The “BasicAddressCheck” (BAC) module has enhanced the “Ortsteil” [“Town district”] field (104) in this record (107).
- **FNC050107** (= FNC / 050 / 107): The “FormalNameCheck” (FNC) module has enhanced (107) information relating to the “Person” [“Individual”] (050) in this record. Please note the consistency here as well. An enhancement by the FormalNameCheck module is indicated using the same status (“107”) that is also used to indicate an enhancement by the BasicAddressCheck module.
- **FNC401107** (= FNC / 401 / 107): The “FormalNameCheck (FNC)” module has enhanced (107) the “Anrede” [“Form of address”] field (401).

The following sections will first set out all the defined values for modules, levels, address types, fields and statuses. Every combination of

- a module with
- a level, an address type or a field and
- a status

produces a potential statement in the ADDRESSFACTORY system. These tables can be used to understand any key of the ADDRESSFACTORY system. As not all the statements that can be obtained in this way make sense, the Complete list of ADDRESSFACTORY keys sets out all the matters on which information is actually issued by the ADDRESSFACTORY system.

4.3.1.1.2 Modules

Value	Interpretation
BAC	BasicAddressCheck
FNC	FormalNameCheck
MOV	MoveProfessional
PDC	PremiumDeliveryCheck
DC	DoubleClean
GEO	GeoMatch
PHM	PhoneMatch
MDL	LocalMatch
NEG	FileMatch

4.3.1.1.3 Levels and address types

Value	Level
000	Global
010	Street address
011	PO box address
012	Bulk recipient’s address
013	Packstation address
017	Postfiliale Direkt
020	Street level
030	Building level
040	Household level
050	Individual level

4.3.1.1.4 Fields

Value	Field
100	Postal code (street address)
101	Town/city (street address)
102	Street (street address)
103	Town/city suffix (street address)
104	Town district (street address)
105	Town/city, abbreviated form (street address)
106	Street, abbreviated form (street address)
110	Postal code (PO box)
111	Town/city (PO box)
112	PO box number (postal code)
113	Town/city suffix (PO box)
115	Town/city, abbreviated form (PO box)
120	Postal code (bulk recipient)
121	Town/city (bulk recipient)

122	Surname (bulk recipient)
123	Town/city suffix (bulk recipient)
125	Town/city, abbreviated form (bulk recipient)
130	Postal code (Packstation)
131	Town/city (Packstation)
132	Packstation number (Packstation)
133	Town/city suffix (Packstation)
135	Town/city, abbreviated form (Packstation)
140	Political information (municipality, district, etc.) (street address)
144	Country (street address)
145	Routing data (street address)
150	Political information (municipality, district, etc.) (PO box)
154	Routing data (PO box)
160	Political information (municipality, district, etc.) (bulk recipient)
164	Routing data (bulk recipient)
170	Postcode (Postfiliale Direkt)
171	Town/city (Postfiliale Direkt)
172	Post office number (Postfiliale Direkt)
173	Town/city suffix (Postfiliale Direkt)
200	House number
201	House number suffix
300	Surname
301	Name suffix
400	First name
401	Form of address
402	Title
403	Gender
404	Noble title (e.g. “Count”)
405	Name prefix (e.g. “von”)
407	Additional address information (e.g. “c/o Müller”)

408	Delivery information (e.g. “4th floor”)
501	Area code
502	Direct dial
601	Geocoordinates WGS84 longitude
602	Geocoordinates WGS84 latitude
611	Geocoordinates UTM easting WGS84
612	Geocoordinates UTM northing WGS84
622	Geocoordinates Gauß-Krüger easting
623	Geocoordinates Gauß-Krüger northing
710	Statistical credit rating index
711	Personal credit rating information: hit flag
712	Personal credit rating information: attribute flag
713	Personal credit rating information: attribute date
714	Personal credit rating information: attribute reference number
715	Personal credit rating information: attribute completion date
750	Personal credit rating information: date of birth
751	Personal credit rating information: inquiry reason
752	Personal credit rating information: ID

4.3.1.1.5 Status

Value	**Status**
102	Correct. A field, an address type or a level was found by the system to be correct in the form in which it was entered.
103	(significantly) corrected
104	corrected slightly
105	deliverable
106	non-deliverable
107	enhanced
110	separated from original data
111	different

112	moved
113	Address type changed
120	Recipient deceased
121	Recipient thought to be deceased
130	Duplicate
131	Header duplicate
132	Successive duplicate
135	Successive duplicate with regard to negative file or list
140	Found in Robinson list
141	Found in fake names list
500	not found/not enhanced
501	not filled in
503	ambiguous
504	Foreign address
505	Incorporation into another municipality
506	Company address
509	not requested
700	PostAdress Nachsendeaufträge [relocation requests]
701	PostAdress in addition
702	SAZ
703	PostAdress moversPLUS
704	Acxiom
705	EOS

4.3.2 Complete list of ADDRESSFACTORY keys

The following list of keys sets out all the matters on which information is issued in the ADDRESSFACTORY system. Please note that the structure of the keys follows a system that is explained in the Introduction to the ADDRESSFACTORY key system.

4.3.2.1 BasicAddressCheck (BAC)

Key	Interpretation
BAC000111	Different record. These are records for which the postal address cannot be corrected.
BAC000112	BAC carried out. However, the result has become obsolete as result of the subsequent enhancement of a relocation.
BAC000504	Foreign address
BAC010102	Street address correct
BAC010103	Street address (significantly) corrected
BAC010104	Street address corrected slightly
BAC010107	Enhancement of street address fields
BAC010110	Separation of street address fields
BAC010113	Address type changed to street address
BAC010500	Street address not found
BAC010501	Street address field not filled in
BAC010503	Street address ambiguous
BAC011102	PO box address correct
BAC011103	PO box address (significantly) corrected
BAC011104	PO box address corrected slightly
BAC011107	Enhancement of street address fields
BAC011110	Separation of PO box address fields
BAC011113	Address type changed to PO box address
BAC011500	PO box address not found
BAC011501	PO box address field not filled in
BAC011503	PO box address ambiguous
BAC012102	Bulk recipient’s address correct
BAC012103	Bulk recipient’s address (significantly) corrected
BAC012104	Bulk recipient’s address corrected slightly
BAC012107	Enhancement of fields relating to the bulk recipient’s address
BAC012110	Separation of fields relating to the bulk recipient’s address
BAC012113	Address type changed in bulk recipient’s address
BAC012500	Bulk recipient’s address not found
BAC012501	Bulk recipient’s address field not filled in
BAC012503	Bulk recipient’s address ambiguous
BAC013102	Packstation address correct
BAC013103	Packstation address (significantly) corrected
BAC013104	Packstation address corrected slightly

BAC013107	Enhancement of fields relating to the Packstation address
BAC013110	Separation of fields relating to the Packstation address
BAC013113	Address type changed to Packstation address
BAC013500	Packstation address not found
BAC013501	Packstation address field not filled in
BAC013503	Packstation address ambiguous
BAC017102	Postfiliale Direkt address correct
BAC017103	Postfiliale Direkt address (significantly) corrected
BAC017104	Postfiliale Direkt address corrected slightly
BAC017107	Enhancement of fields relating to the Postfiliale Direkt address
BAC017110	Separation of fields relating to the Postfiliale Direkt address
BAC017113	Address type changed to Postfiliale Direkt address
BAC017500	Postfiliale Direkt address not found
BAC017501	Postfiliale Direkt address field not filled in
BAC017503	Postfiliale Direkt address ambiguous
BAC100103	Postal code address (street address) (significantly) corrected
BAC100104	Postal code (street address) corrected slightly
BAC100107	Postal code (street address) enhanced
BAC100110	Postal code (street address) separated from original data
BAC100500	Postal code (street address) not found
BAC100501	Postal code (street address) not filled in
BAC101103	Town/city (street address) (significantly) corrected
BAC101104	Town/city (street address) corrected slightly
BAC101107	Town/city (street address) enhanced
BAC101110	Town/city (street address) separated from original data
BAC101500	Town/city (street address) not found
BAC101501	Town/city (street address) not filled in
BAC101503	Town/city (street address) ambiguous
BAC102103	Street (street address) (significantly) corrected
BAC102104	Street (street address) corrected slightly
BAC102500	Street (street address) not found
BAC102501	Street (street address) not filled in
BAC102503	Street (street address) ambiguous
BAC103103	Town/city suffix (street address) (significantly) corrected
BAC103104	Town/city suffix (street address) corrected slightly
BAC103107	Town/city suffix (street address) enhanced
BAC103110	Town/city suffix (street address) separated from original data
BAC104103	Town district (street address) (significantly) corrected
BAC104104	Town district (street address) corrected slightly
BAC104107	Town district (street address) enhanced
BAC104110	Town district (street address) separated from original data

BAC110103	Postal code (PO box) (significantly) corrected
BAC110104	Postal code (PO box) corrected slightly
BAC110107	Postal code (PO box) enhanced
BAC110110	Postal code (PO box) separated from original data
BAC110500	Postal code (PO box) not found
BAC110501	Postal code (PO box) not filled in
BAC111103	Town/city (PO box) (significantly) corrected
BAC111104	Town/city (PO box) corrected slightly
BAC111107	Town/city (PO box) enhanced
BAC111110	Town/city (PO box) separated from original data
BAC111500	Town/city (PO box) not found
BAC111501	Town/city (PO box) not filled in
BAC111503	Town/city (PO box) ambiguous
BAC112104	PO box number (PO box) corrected slightly
BAC112500	PO box number (PO box) not found
BAC112501	PO box number (PO box) not filled in
BAC112503	PO box number (PO box) ambiguous
BAC113103	Town/city suffix (PO box) (significantly) corrected
BAC113104	Town/city suffix (PO box) corrected slightly
BAC113107	Town/city suffix (PO box) enhanced
BAC113110	Town/city suffix (PO box) separated from original data
BAC120103	Postal code (bulk recipient) (significantly) corrected
BAC120104	Postal code (bulk recipient) corrected slightly
BAC120107	Postal code (bulk recipient) enhanced
BAC120110	Postal code (bulk recipient) separated from original data
BAC120500	Postal code (bulk recipient) not found
BAC120501	Postal code (bulk recipient) not filled in
BAC121103	Town/city (bulk recipient) (significantly) corrected
BAC121104	Town/city (bulk recipient) corrected slightly
BAC121107	Town/city (bulk recipient) enhanced
BAC121110	Town/city (bulk recipient) separated from original data
BAC121500	Town/city (bulk recipient) not found
BAC121501	Town/city (bulk recipient) not filled in
BAC121503	Town/city (bulk recipient) ambiguous
BAC122103	Surname (bulk recipient) (significantly) corrected
BAC122104	Surname (bulk recipient) corrected slightly
BAC122107	Surname (bulk recipient) enhanced
BAC122500	Surname (bulk recipient) not found
BAC122501	Surname (bulk recipient) not filled in
BAC122503	Surname (bulk recipient) ambiguous
BAC123103	Town/city suffix (bulk recipient) (significantly) corrected

BAC123104	Town/city suffix (bulk recipient) corrected slightly
BAC123107	Town/city suffix (bulk recipient) enhanced
BAC123110	Town/city suffix (bulk recipient) separated from original data
BAC130103	Postal code (Packstation) (significantly) corrected
BAC130104	Postal code (Packstation) corrected slightly
BAC130107	Postal code (Packstation) enhanced
BAC130110	Postal code (Packstation) separated from original data
BAC130500	Postal code (Packstation) not found
BAC130501	Postal code (Packstation) not filled in
BAC130503	Postal code (Packstation) ambiguous
BAC131103	Town/city (Packstation) (significantly) corrected
BAC131104	Town/city (Packstation) corrected slightly
BAC131107	Town/city (Packstation) enhanced
BAC131110	Town/city (Packstation) separated from original data
BAC131500	Town/city (Packstation) not found
BAC131501	Town/city (Packstation) not filled in
BAC131503	Town/city (Packstation) ambiguous
BAC132104	Packstation number (Packstation) corrected slightly
BAC132500	Packstation number (Packstation) not found
BAC132501	Packstation number (Packstation) not filled in
BAC132503	Packstation number (Packstation) ambiguous
BAC133103	Town/city suffix (Packstation) (significantly) corrected
BAC133104	Town/city suffix (Packstation) corrected slightly
BAC133107	Town/city suffix (Packstation) enhanced
BAC133110	Town/city suffix (Packstation) separated from original data
BAC140107	Political information (municipality, district, etc.) (street address) has been enhanced
BAC144103	Country (street address) (significantly) corrected
BAC144104	Country (street address) corrected slightly
BAC144107	Country (street address) enhanced
BAC145107	Routing data (street address) enhanced
BAC150107	Political information (municipality, district, etc.) (PO box) enhanced
BAC154107	Country (PO box) enhanced
BAC160107	Political information (municipality, district, etc.) (bulk recipient) enhanced
BAC164107	Country (bulk recipient) enhanced
BAC170103	Postcode (Postfiliale Direkt) (significantly) corrected
BAC170104	Postcode (Postfiliale Direkt) corrected slightly
BAC170107	Postcode (Postfiliale Direkt) enhanced
BAC170110	Postcode (Postfiliale Direkt) separated from original data
BAC170500	Postcode (Postfiliale Direkt) not found
BAC170501	Postcode (Postfiliale Direkt) not filled in

BAC170503	Postcode (Postfiliale Direkt) ambiguous
BAC171103	Town/city (Postfiliale Direkt) (significantly) corrected
BAC171104	Town/city (Postfiliale Direkt) corrected slightly
BAC171107	Town/city (Postfiliale Direkt) enhanced
BAC171110	Town/city (Postfiliale Direkt) separated from original data
BAC170500	Town/city (Postfiliale Direkt) not found
BAC170501	Town/city (Postfiliale Direkt) not filled in
BAC170503	Town/city (Postfiliale Direkt) ambiguous
BAC172103	Post office number (Postfiliale Direkt) (significantly) corrected
BAC172104	Post office number (Postfiliale Direkt) corrected slightly
BAC172107	Post office number (Postfiliale Direkt) enhanced
BAC172110	Post office number (Postfiliale Direkt) separated from original data
BAC172500	Post office number (Postfiliale Direkt) not found
BAC172501	Post office number (Postfiliale Direkt) not filled in
BAC172503	Post office number (Postfiliale Direkt) ambiguous
BAC173103	Town/city suffix (Postfiliale Direkt) (significantly) corrected
BAC173104	Town/city suffix (Postfiliale Direkt) corrected slightly
BAC173107	Town/city suffix (Postfiliale Direkt) enhanced
BAC173110	Town/city suffix (Postfiliale Direkt) separated from original data
BAC200110	House number separated from original data
BAC201110	House number suffix separated from original data

4.3.2.2 FormalNameCheck (FNC)

Key	Interpretation
FNC000112	FNC carried out. However, the result has become obsolete as result of the subsequent enhancement of a relocation.
FNC000500	Not found in Deutsche Post reference data
FNC030102	Correct building
FNC030103	Building (significantly) corrected
FNC030104	Building corrected slightly
FNC030107	Enhancement of building fields
FNC030501	Building fields not filled in
FNC030110	Separation of building fields
FNC040102	Household correct
FNC040103	Household (significantly) corrected
FNC040104	Household corrected slightly
FNC040107	Enhancement of household fields
FNC040110	Separation of household fields
FNC040501	Household fields not filled in
FNC050102	Individual correct
FNC050103	Individual (significantly) corrected
FNC050104	Individual corrected slightly
FNC050107	Enhancement of fields relating to the individual
FNC050110	Separation of fields relating to the individual
FNC050501	Fields relating to the individual not filled in
FNC050503	Partnership identified
FNC050506	Company address
FNC110107	Postal code (PO box) enhanced
FNC111107	Town/city (PO box) enhanced
FNC112107	PO box number (PO box) enhanced
FNC113107	Town/city suffix (PO box) enhanced
FNC200103	House number (significantly) corrected
FNC200104	House number corrected slightly
FNC200107	House number enhanced
FNC200501	House number not filled in
FNC201103	House number suffix (significantly) corrected
FNC201104	House number suffix corrected slightly
FNC201107	House number suffix enhanced
FNC201110	Separation of house number suffix fields
FNC300103	Surname (significantly) corrected
FNC300104	Surname corrected slightly

FNC300110	Surname separated from original data
FNC300501	Surname not filled in
FNC301103	Name suffix (significantly) corrected
FNC301104	Name suffix corrected slightly
FNC301107	Name suffix enhanced
FNC301110	Name suffix separated from original data
FNC400103	First name (significantly) corrected
FNC400104	First name corrected slightly
FNC400110	First name separated from original data
FNC400501	First name not filled in
FNC401103	Form of address (significantly corrected)
FNC401104	Form of address corrected slightly
FNC401107	Form of address enhanced
FNC401110	Form of address separated from original data
FNC402103	Title (significantly) corrected
FNC402104	Title corrected slightly
FNC402107	Title enhanced
FNC402110	Title separated from original data
FNC403103	Gender (significantly) corrected
FNC403111	Gender different
FNC404103	Noble title (significantly) corrected
FNC404104	Noble title corrected slightly
FNC404107	Noble title enhanced
FNC404110	Noble title separated from original data
FNC405103	Prefix (significantly corrected
FNC405104	Prefix corrected slightly
FNC405107	Prefix enhanced
FNC405110	Prefix separated from original data

4.3.2.3 MoveProfessional (MOV)

Key	Interpretation
MOV000112	Relocation information supplied
MOV000500	No relocation address supplied
MOV000504	The relocation information supplied refers to an international relocation
MOV000700	The relocation information originates from PostAdress (NSA)
MOV000701	The relocation information originates from PostAdress (extended substance)
MOV000702	The relocation information originates from SAZ
MOV000703	The relocation information originates from PostAdress (moversPLUS)
MOV000704	The relocation information originates from Acxiom
MOV000705	The relocation information originates from EOS
MOV010107	Enhancement of street address fields
MOV010111	Different street address (the street address of the new address does not exist in the routing data reference)
MOV011107	Enhancement of street address fields
MOV011111	Different PO box address (the PO box address of the new address does not exist in the routing data reference)
MOV040103	Household (significantly) corrected
MOV040104	Household corrected slightly
MOV040107	Enhancement of household fields
MOV040110	Separation of household fields
MOV040111	Different household (the relocation refers to a household that differs from the record provided)
MOV050103	Individual (significantly) corrected
MOV050104	Individual corrected slightly
MOV050107	Enhancement of fields relating to the individual
MOV050110	Separation of fields relating to the individual
MOV110107	Postal code (PO box) enhanced
MOV111107	Town/city (PO box) enhanced
MOV112107	PO box number (PO box) enhanced
MOV144107	Country (street address) enhanced
MOV300103	Surname (significantly) corrected
MOV300104	Surname corrected slightly
MOV300110	Surname separated from original data
MOV301103	Name suffix (significantly) corrected
MOV301104	Name suffix corrected slightly
MOV301107	Name suffix enhanced
MOV301110	Name suffix separated from original data
MOV400103	First name (significantly) corrected
MOV400104	First name corrected slightly
MOV400110	First name separated from original data

MOV401103	Form of address (significantly corrected)
MOV401104	Form of address corrected slightly
MOV401107	Form of address enhanced
MOV401110	Form of address separated from original data
MOV402103	Title (significantly) corrected
MOV402104	Title corrected slightly
MOV402107	Title enhanced
MOV402110	Title separated from original data
MOV403103	Gender (significantly) corrected
MOV404103	Noble title (significantly) corrected
MOV404104	Noble title corrected slightly
MOV404107	Noble title enhanced
MOV404110	Noble title separated from original data
MOV405107	Prefix enhanced
MOV405110	Prefix separated from original data
MOV407107	Additional address information enhanced
MOV408107	Delivery information enhanced

4.3.2.4 PremiumDeliveryCheck (PDC)

Key	Interpretation
PDC000112	PDC carried out. However, the result has become obsolete as result of the subsequent enhancement of a relocation.
PDC010105	Deliverable via the street address
PDC011105	Deliverable via the PO box address
PDC012105	Deliverable via the bulk recipient's address
PDC010106	Non-deliverable street address
PDC011106	Non-deliverable PO box address
PDC012106	Non-deliverable bulk recipient's address
PDC030105	Deliverable building
PDC030106	Non-deliverable building
PDC030500	Building not found
PDC030501	Building fields not filled in
PDC030509	Deliverability information not requested for the building
PDC040105	Can be delivered to household
PDC040106	Cannot be delivered to household
PDC040500	Household not found
PDC040509	Deliverability information not requested for the household
PDC050105	Can be delivered to recipient
PDC050106	Non-deliverable person
PDC050120	Person deceased
PDC050121	Person could be deceased
PDC050500	Person not found
PDC050509	Deliverability information not requested for the person
PDC200501	House number not filled in

4.3.2.5 DoubleClean (DUB)

Key	Interpretation
DUB000130	Duplicate
DUB000131	Header duplicate
DUB000132	Successive duplicate
DUB000135	Successive duplicate with regard to negative file
DUB000500	Not a duplicate

4.3.2.6 GeoMatch (GEO)

Key	Interpretation
GEO000500	No geographic coordinates enhanced
GEO000700	Interpolated building coordinates
GEO000701	Precise building coordinates
GEO020107	Geographic coordinates enhanced at street level
GEO020500	No geographic coordinates enhanced at street level
GEO030107	Geographic coordinates enhanced at building level
GEO030500	No geographic coordinates enhanced at building level
GEO060107	Geographic coordinates enhanced at postcode level
GEO060500	No Geographic coordinates enhanced at postcode level

4.3.2.7 PhoneMatch (PHM)

Key	Interpretation
PHM040102	Household’s telephone number correct
PHM040103	Household’s telephone number (significantly) corrected
PHM040104	Household’s telephone number corrected slightly
PHM040107	Household’s telephone number enhanced
PHM040500	Household not found/no telephone number enhanced
PHM050102	Individual’s telephone number correct
PHM050103	Individual’s telephone number (significantly) corrected
PHM050104	Individual’s telephone number corrected slightly
PHM050107	Individual’s telephone number enhanced
PHM050500	Individual not found/no telephone number enhanced
PHM501103	Area code (significantly) corrected
PHM501104	Area code corrected slightly
PHM501107	Area code enhanced
PHM502103	Direct dial (significantly) corrected
PHM502104	Direct dial corrected slightly
PHM502107	Direct dial enhanced

4.3.2.8 LocalMatch (MDL)

Key	Interpretation
MDL000107	Information relating to the record enhanced
MDL000500	Record not found/no information enhanced
MDL000501	Fields of the record not filled in (mandatory fields skipped, e.g. for inquiries relating to the personal credit rating where an inquiry reason must be given)
MDL710107	Statistical credit rating index enhanced
MDL710500	Statistical credit rating not enhanced
MDL711107	Personal credit rating information: Hit flag enhanced
MDL711500	Personal credit rating information: hit flag not enhanced
MDL712107	Personal credit rating information: Attribute flag enhanced
MDL713107	Personal credit rating information: Attribute date enhanced
MDL714107	Personal credit rating information: Attribute reference number enhanced
MDL715107	Personal credit rating information: Attribute completion date enhanced
MDL750107	Personal credit rating information: Date of birth enhanced
MDL751501	Personal credit rating information: inquiry reason not filled in
MDL752501	Personal credit rating information: ID not filled in

4.3.2.9 FileMatch (NEG)

Key	Interpretation
NEG000140	Found in Robinson list
NEG000141	Found in fake names list
NEG000500	Not found in negative list

5 Annex

5.1 Supported formats in input and output

The ADDRESSFACTORY system supports the following file formats for input and output files.

- **Text (variable column width)** with the following separators: commas, semicolons, tildes, hash symbols, colons, tabs and vertical bars. The following character sets are supported: ISO-8859-1, ISO-8859-15, US-ASCII, WINDOWS-1252, UTF-8 and IBM850.
- **Text (fixed column width)** with virtually any width. The following character sets are supported: ISO-8859-1, ISO-8859-15, US-ASCII, WINDOWS-1252, UTF-8 and IBM850.

The ADDRESSFACTORY system supports the following file formats exclusively for output files.

- **Microsoft Excel 1997, 2000, 2003, 2007, 2010.** The restrictions on line and column numbers in Excel apply here.

5.2 Frequently asked questions (FAQs)

We are often asked the following questions in connection with the ADDRESSFACTORY system:

What is ADDRESSFACTORY DIRECT?
ADDRESSFACTORY DIRECT is a service whereby individual inquiries are transferred from Deutsche Post Direkt to the matching system, checked immediately and corrected where necessary. The service is available online.
The direct connection between ADDRESSFACTORY DIRECT and your systems and the short response time of the Deutsche Post Direkt systems (an average of two to three seconds per address) enables addresses to be updated within normal working processes.
It can be integrated into your applications using a web service interface with which you will be provided.

What is ADDRESSFACTORY AUTOMATIC?
ADDRESSFACTORY AUTOMATIC is especially useful for companies wanting to cleanse and update their private customer addresses on a regular basis. Automated address matching and data supply via the Internet will optimize business processes at the same time. The settings for address matching are defined and automated according to the company or project requirements. In addition, the transfer and collection of cleansed address data can be automated within the company and take place at regular intervals.

Can I test ADDRESSFACTORY DIRECT?
ADDRESSFACTORY DIRECT can be tested in various ways. On the one hand, a free-of-charge test server is provided for this. It provides an implementation of the same interface that the real ADDRESSFACTORY DIRECT server also implements. However, the test server only returns static changes to the data transmitted by you and made-up status keys. In order to use the test server, you need to ask us to set up an account for you.

It is also possible to agree a test operation. Here you can test ADDRESSFACTORY DIRECT with real keys and results for 8 weeks. Please see the price list (see below) for the terms and conditions or contact our customer service hotline (see below).

What is the ADDRESSFACTORY DIRECT test server? What is the difference from the real ADDRESSFACTORY DIRECT server?

The ADDRESSFACTORY DIRECT test server is provided by Deutsche Post Direkt for non-binding integration tests. It again provides an implementation of the same interface that the real ADDRESSFACTORY DIRECT server implements. However, the test server only returns static changes to the data supplied by you and made-up status keys. At any time during the implementation, there is the option of contacting the real ADDRESSFACTORY DIRECT server instead of the test server through a simple configuration change.

What is the ADDRESSFACTORY DIRECT web service interface?

A web service interface (client) is a local representation of the ADDRESSFACTORY systems in your system. The web service client will either be provided by Deutsche Post Direkt (Java) or you can easily generate it yourself (other programming languages).

Web service technology is platform-dependent and is now standard in software development. Thus the ADDRESSFACTORY DIRECT web service can be used from practically any programming environment (e.g. C++, .NET, PHP, etc.). The networks of a large number of companies are penetrable for web service inquiries since some WWW accesses are permitted there. In many cases it is not therefore necessary to extend the firewall.

Is there an alternative way to access ADDRESSFACTORY DIRECT?
For sporadic individual inquiries, we offer you access to the online user interface on which you can enter your data directly and compare it. Simply log in using your user name and password at http://www.postdirekt.de/online-services and follow the links to ADDRESSFACTORY DIRECT in order to reach the user interface.

Which browsers can be used for the alternative access to ADDRESSFACTORY DIRECT?
The online user interface of ADDRESSFACTORY DIRECT has been tested successfully with Internet Explorer versions 6 and 8. Version 9 can be used in compatibility mode. Mozilla Firefox can also be used. Alternative browsers such as Safari are not officially supported but have been deployed successfully.

How does the process of setting up ADDRESSFACTORY AUTOMATIC work?
You need a user name and password to access the ADDRESSFACTORY AUTOMATIC system. These access details are the same ones that you also use to access other Deutsche Post Direkt online services. A Deutsche Post Direkt employee must set up the ADDRESSFACTORY AUTOMATIC system for you. During the setup process, the employee will manually compare your data once in order to

- prepare the ADDRESSFACTORY AUTOMATIC system for the format and structure of your data
- select comparison settings that are appropriate for your data, and
- define the format and structure of the output file(s).

This collection of settings is referred to as a configuration and it effectively acts as a template for all your subsequent comparisons with the ADDRESSFACTORY AUTOMATIC system. While a configuration is usually assigned to a user name, if required it is also possible to use several configurations in parallel. In this case, please specify the name of the configuration to be used when you upload the data using an ID in the file name (see: Using different comparison settings). You therefore have the option of also using the ADDRESSFACTORY AUTOMATIC system if you wish to regularly upload files with different formats or wish to perform your comparisons with different comparison settings. The number of configurations is limited to an appropriate quantity.

Which modules are currently available for ADDRESSFACTORY DIRECT and ADDRESSFACTORY AUTOMATIC?

- **BasicAddressCheck** (checks an address for the correct street, town/city and postal code)
- **FormalNameCheck** (checks and corrects first name and surname)
- **PremiumDeliveryCheck** (checks the deliverability of first name and surname)
- **MoveProfessional** (provides relocation addresses)
- **FileMatch** (negative comparison with predefined lists)
- **DoubleClean** (removal of duplicates – ADDRESSFACTORY AUTOMATIC only)
- **GeoMatch** (address enhancement with geographic data)
- **PhoneMatch** (enhancement with telephone numbers)
- **LocalMatch** (enhancement with socio-demographic information). At present, only the RiskControl products for enhancing the risk index for the statistical likelihood of a missed payment and personal credit rating information in cooperation with InfoScore Consumer Data GmbH. The provision of personal information is only possible with ADDRESSFACTORY DIRECT.

Are all modules automatically queried?
You decide which modules are to be implemented in a comparison. Only **BasicAddressCheck** is mandatory. To perform a comparison, specify the configuration settings in advance. Your advisor at Deutsche Post Direkt will be happy to inform you about the relevant options and will provide you with the appropriate configurations for your comparisons.

How can customers connect to Deutsche Post Direkt?
The connection to ADDRESSFACTORY DIRECT web services is mainly over the public Internet. The protection of your data is ensured by the encrypted transmission protocol HTTPS.

What needs to be observed when using a firewall?
The system for operating the web service client must be able to make inquiries on the public Internet via port 443. Only you or your provider can activate this port.

Which operating systems does ADDRESSFACTORY DIRECT run on?
The web service interface is platform-independent. You can therefore use it with all commercially-available operating systems (e.g. Unix, Linux, Solaris, HPUX, Windows, Mac OS).

How is ADDRESSFACTORY DIRECT integrated into your application?
ADDRESSFACTORY DIRECT should be embedded into your application the moment a new address is recorded in the system, i.e. the address is sent to the data center and compared immediately after it is entered.

You are responsible for establishing a data connection to Deutsche Post Direkt.
Data encryption will generally be taken over transparently from the web service infrastructure.
You will be provided with the information relevant for the connection.

Deutsche Post Direkt will provide Java programmers with a ready-to-use web service client which is integrated as a type of library into proprietary programs. Together with the web service client, we will send an example application with which the first tests can be performed even without programming. The web service interface provides programmers who work with other programming languages with tools for their relevant programming environment via the standard web service. For some programming environments, Deutsche Post Direkt will also provide short examples in the web service documentation.

How are addresses protected against misuse?
The transmission of data between the web service interface and the reference database of Deutsche Post Direkt is carried out using the industry-standard Transport Layer Security (TLS, here https), which is also used in online banking, for example.

How is the certificate renewed?
The certification key for the Deutsche Post Direkt website (SSL server certificate) is only ever valid for a specific period of time, after which it needs to be renewed with a new certificate. If the certificate has an online link, the certificate will be renewed automatically. If, on the other hand, the certificate is saved locally, it must be renewed manually with the up-to-date certificate in order to ensure continued secure access to our web server.

What are the requirements for the availability of ADDRESSFACTORY DIRECT?
- You must be activated as an ADDRESSFACTORY DIRECT user.
- The web service client must be integrated into your application.
- Port 443 in the firewall must be activated in both directions.
- A data connection from the web service client to Deutsche Post Direkt must be established over the public Internet.

Who administrates this service?
- Deutsche Post Direkt is in charge of registering ADDRESSFACTORY DIRECT users and activating their accounts.
- Your Internet provider manages the Internet connection.
- You integrate the web service interface into your application, control the application flow and system failure management (e.g. timeouts).

How is ADDRESSFACTORY DIRECT protected against system failure?
With ADDRESSFACTORY DIRECT, Deutsche Post Direkt offers a solution in which all essential system components are designed redundantly. You do not need to take any special measures.

How does the data transfer work with ADDRESSFACTORY AUTOMATIC?
The ADDRESSFACTORY AUTOMATIC system always uses Deutsche Post Direkt's data exchange platform for the transmission of data to and from Deutsche Post Direkt. The universal data exchange platform supports the following types of access (*see also Uploading data*).

- The interactive uploading of data is made possible by the web interface.
- Alternatively, it is possible to transfer your data to the data exchange platform via Secure File Transfer Protocol (SFTP). With this method, you can automate the transmission of data or use an SFTP client as an interface instead of our web interface. We recommend that you use this method if you wish to automate the upload of data from your IT system or if you regularly use SFTP clients for data transmission. You can obtain the access details from a Deutsche Post Direkt employee.
- The result files can also be returned to an external SFTP server.

How do I upload the data to be compared for ADDRESSFACTORY AUTOMATIC?
The easiest way of interactively transferring data to Deutsche Post Direkt's data exchange platform is using the web interface of the data exchange platform. All you need for this at your end is a web browser with access to the public Internet. Once you have registered, you will receive a user account and password from us that you can use to upload data to the upload folder of the ADDRESSFACTORY AUTOMATIC system. Please remember that the uploaded files are compared immediately. Once the comparison is complete, you will be notified by e-mail.
Please note: *In terms of their format and structure, the uploaded files must correspond to the agreements concluded in advance with a Deutsche Post Direkt employee. Files that do not correspond to the agreed structure will either be rejected by the system or – if the system fails to detect the deviation – an unsuccessful comparison will be carried out.*

What do I need to bear in mind during the upload process?
The text file to be compared must be uploaded to the upload folder. If you wish to compare multiple files using our ADDRESSFACTORY AUTOMATIC system, you can send these files bundled together in a zip archive. All the files in this archive must have the same format and structure as you agreed with Deutsche Post Direkt. Multiple files to be compared should be named using the specified naming convention. If several configurations are available, the desired configuration must also be specified, otherwise the standard configuration will be selected automatically *(see also: Using different comparison settings*).

Do I need to upload the files for comparison using ADDRESSFACTORY AUTOMATIC in encrypted or unencrypted format?
You can choose between the following options: You can upload the file as an unencrypted zip archive or you can encrypt the zip archive using a password. If you use this method, the zip password must be defined and saved on our servers. Another type of encryption is PGP encryption. With this method, you can encrypt the data using our PGP key and then receive the data back in encoded form using your PGP key. The relevant PGP key will be stored in the system. With the PGP encryption process, you do not upload a zip archive but a PGP file containing the files to be compared.

What file formats can ADDRESSFACTORY AUTOMATIC compare?
The ADDRESSFACTORY system supports the following file formats for input and output files.

- Text (variable column width) with the following separators: commas, semicolons, tildes, hash symbols, colons, tabs and vertical bars. The following character sets are supported: ISO-8859-1, ISO-8859-15, US-ASCII, WINDOWS-1252, UTF-8 and IBM850.

- Text (fixed column width) with virtually any width. The following character sets are supported: ISO-8859-1, ISO-8859-15, US-ASCII, WINDOWS-1252, UTF-8 and IBM850.

A record description of the individual column contents should always be specified in any case (including the column width for fixed text files or the maximum column width for variable text files).

What information should my file contain?
The following comparison columns are relevant for a successful comparison: a **unique ID**, that you can later use to allocate the data record again, **first name, surname, street, house number, postal code, town/city** and, **where possible, specification of the district**, in order to resolve any ambiguities in the address.

What do I need to bear in mind with the record format?
It is important that the record format of the files to be compared always remains the same because the configuration is created once for a record format specified by you and stored on the server.

Can different configurations be used with ADDRESSFACTORY DIRECT?
It is possible to use different configurations both in the interface solution and in the online interface. A maximum of 3 different configurations can be used during test operation.

Can I use different comparison settings for ADDRESSFACTORY AUTOMATIC?
If you have

- more than one type of input file in terms of the format or structure, or
- if you would like different comparisons to be carried out with different comparison settings, or
- if you would like the result files provided to be filtered by different types and methods, a Deutsche Post Direkt employee will assign you several configurations, and each of these will correspond to one of your use cases. Each of the configurations will be provided with a name and these names will be communicated to you.

The ADDRESSFACTORY AUTOMATIC system will treat one of the configurations agreed with you as the “standard configuration”. The system will then always use this configuration if it does not receive any other information about the configuration to be used. Alternatively you can prompt the system to select a certain configuration by using the character string --<CONFIGURATIONNAME> as part of the name of the uploaded file.

Can I compare multiple files with one another?
In the ADDRESSFACTORY AUTOMATIC system, you have the option of having multiple files cleansed at the same time by sending multiple files bundled together in a zip archive. All the files in this archive must have the same format and the same structure as you agreed with Deutsche Post Direkt. The same comparison settings will be applied to each of the files.

If a duplicate check is performed on your data, the priority order of your files will have an impact on the identification of header duplicates. During this check, the ADDRESSFACTORY AUTOMATIC system proceeds in the following order:

- As in the ADDRESSFACTORY WEB system, your own negative files always have priority over your own positive files.
- Within the negative and positive files, the system proceeds in alphabetical order.

If a certain priority order is important for you, you can name your files as follows, for example: “A_CustomerData.txt”, “B_AdditionalCustomerData.txt”, etc.

Can I compare my data against negative files?
The ADDRESSFACTORY AUTOMATIC system offers you the option of working with your own negative files. In order to identify the file uploaded as a negative file, choose a name for the file that starts with exactly one minus sign, e.g. “-BadPayers.txt”.
Please note: *If you upload a negative file to the system, a duplicate check will automatically be performed on your data if the DoubleClean module was selected in the configuration. If you have agreed comparison options for the duplicate check with Deutsche Post Direkt in advance as part of your configuration, these comparison options will be used for the check. If no such agreement took place in advance, a search will be carried out for duplicates at an individual level with hardness 2 by default.*

What does it cost to cleanse negative files?
We cleanse negative files free of charge with the same comparison settings with which we also process your positive files. This processing is absolutely essential in order to be able to reliably identify matching records between positive and negative files.

However, the corrected negative data is then not available to you to download.

How long does it take for a result to be received with ADDRESSFACTORY DIRECT after an inquiry is made?
Response times depend on the selected network connection. Where there is a good connection over the public Internet, the response time is less than three seconds.

How many inquiries can be made simultaneously?
Inquiries are worked through serially at each workstation. Each address requires 2-3 seconds on average. To increase the number of inquiries, ADDRESSFACTORY DIRECT can be run on several clients at once.

How long does a comparison with ADDRESSFACTORY AUTOMATIC take?
The comparison times vary according to the size of your file to be compared and the scope of the modules to be run through. On average, 300,000 data records are compared in a day.

What do I receive in terms of a result file?
In terms of a result file, you will receive a zip archive with your result data in your download folder or it will be sent to an (S)FTP server specified by you using an FTP forward. It is also possible for the data to be forwarded to another registered user of Deutsche Post Direkt's online services.
In addition to information from the system – number, data and time of the comparison – the file name also includes the name of the input file to make it easier to identify. The content of the zip archive varies according to your agreements with Deutsche Post Direkt. In many cases, we will provide you with an overall result file in the archive. Alternatively, we can also provide you with an archive containing various partial results – e.g. deliverable and non-deliverable data records.
If the transfer to the server specified by you fails, your file is not lost but you will be informed by us via e-mail that the files are available for retrieval from our server.

At what times are ADDRESSFACTORY DIRECT and ADDRESSFACTORY AUTOMATIC available?
The system is available to you seven days a week, twenty-four hours a day. Advance notice will always be provided for scheduled maintenance-related shutdowns, etc.

How can you check the costs of your inquiries?
The number of inquiries you make via ADDRESSFACTORY DIRECT is logged, counted and invoiced accordingly by Deutsche Post Direkt.

What does ADDRESSFACTORY AUTOMATIC and ADDRESSFACTORY DIRECT cost?
The prices can be viewed in the current price list:

Deutsche Post | Price list for ADDRESSFACTORY DIRECT ADDRESSFACTORY AUTOMATIC

Where can I get help for technical problems?

Customer service hotline:
Tel: +49 (0) 228 182-57112
E-mail: info@postdirekt.de

5.3 Typographical conventions

The following typographical conventions should make it easier for you to read this guide. They are used consistently throughout the whole ADDRESSFACTORY guide.

Convention	**Example**
In instructions, interface elements that can be clicked on are indicated by bold and underlined type. Find the indicated element in the interface and click on it in order to follow the instructions.	Click on **Login** to log in.
In instructions, other interface elements are underlined but not displayed in bold type. You will find terms marked in this way again in the accompanying screenshots or in the application itself.	You can find these functions in the Weitere Einstellungen [Other settings] section of the interface.
Particularly important information is highlighted using shaded boxes.	*Please note: This is an important piece of information*
Examples are highlighted using shaded boxes.	*Example: In the record Hans,Mustermann,Hauptstraße,1,12345,Testort, the individual comma-separated fields clearly have the functions first name, surname, street of the street address, house number of the street address, postal code of the street address and town/city of the street address.*

Source code fragments or program outputs are marked by monospaced type. Longer related source code fragments or program outputs are also sometimes highlighted using shaded source code boxes.	`java version "1.6.0_20"`
	`Java(TM) SE Runtime Environment (build 1.6.0_20-b02)`
	`Java HotSpot(TM) Client VM (build 16.3-b01, mixed mode, sharing)`
	
	Then create a `main` method.

6 Glossary

6.1 Glossary topics

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A

Address comparison. An address comparison is understood as the processing of your data with all the options you have selected. For this, you can choose from a series of address cleansing, address enhancement and duplicate checking options from Deutsche Post Direkt's offering.

Address cleansing. If the data provided by you is corrected on the basis of Deutsche Post Direkt's reference databases, this constitutes address cleansing. The BasicAddressCheck, FormalNameCheck, PremiumDeliveryCheck and MoveProfessional modules are all address cleansing modules.

Address enhancement. If the data provided by you is only enhanced by additional fields, this constitutes an address enhancement. The following modules of the ADDRESSFACTORY system are all address enhancement modules: GeoMatch, PhoneMatch and LocalMatch.

ADDRESSFACTORY (3). Version 3 of the ADDRESSFACTORY system represents the third generation of the ADDRESSFACTORY product line from Deutsche Post Direkt. The ADDRESSFACTORY system enables you to have your address data corrected and enhanced, and any duplicates removed by Deutsche Post Direkt. The ADDRESSFACTORY WEB, ADDRESSFACTORY AUTOMATIC, ADDRESSFACTORY DIRECT and ADDRESSFACTORY TAPE product variants are available to you for this.

ADDRESSFACTORY AUTOMATIC. The ADDRESSFACTORY AUTOMATIC product variant is geared towards users who wish to regularly have large address databases compared by Deutsche Post Direkt with one or more clearly defined set(s) of comparison settings. A Deutsche Post Direkt employee defines the set(s) of comparison settings together with you. Then you simply upload data to the Deutsche Post Direkt secure data exchange platform (DEP) as required. Once the data has been compared, we will inform you via e-mail about the details of the comparison. You can obtain the compared results via Deutsche Post Direkt's data exchange platform again. The ADDRESSFACTORY AUTOMATIC product variant is particularly suitable for integration into those of your systems from which you periodically require automated address comparisons.

ADDRESSFACTORY DIRECT. With the ADDRESSFACTORY DIRECT product variant, you integrate the ADDRESSFACTORY system for individual record inquiries into your own applications via a web service interface.

ADDRESSFACTORY TAPE. With the ADDRESSFACTORY TAPE product variant, you send your data to Deutsche Post Direkt electronically or on a data carrier. An adviser handles your comparison and recommends optimum comparison settings to you.

ADDRESSFACTORY WEB. With the ADDRESSFACTORY WEB product variant, the user's input data is transferred to Deutsche Post Direkt via a web browser. You can define the comparison settings yourself in the ADDRESSFACTORY WEB system which means that you can redefine the details of your comparison with each project. The data that has been subjected to the comparison can also be downloaded by the user via a web browser.

B

BasicAddressCheck (BAC). BasicAddressCheck is an address cleansing module that carries out the postal checking of your addresses. A postal check makes sure that the postal part of the address exists and is correct. Any errors that can be corrected are corrected in the process.

For more information, see BasicAddressCheck (BAC).

Building level. see Level.

C

Classic view. The classic view of ADDRESSFACTORY Web is the second option for defining a project after the Projektassistenten [Project Assistant]. Advanced users can use the classic view to define the input data, the comparison settings and the selection and provision options for their output data.

Cleansing. see Address cleansing.

Configuration. In the ADDRESSFACTORY system, a configuration is a known set of comparison settings and definitions relating to input and output files that is assigned to you by Deutsche Post Direkt. In ADDRESSFACTORY WEB, you can use such a configuration as a template for your own comparison settings. In ADDRESSFACTORY AUTOMATIC and DIRECT, a configuration is even a mandatory requirement for your comparison as it is not possible for the user to define the comparison settings in these product variants.

Comparison. see Address comparison

Comparison hardness. Most of the ADDRESSFACTORY modules use the term comparison hardness (or hardness for short) in their options. Comparison hardness is an ADDRESSFACTORY-wide uniform system in which the maximum identification distance and the maximum permitted corrections are specified. You can find further details on comparison hardness in the Overview of the ADDRESSFACTORY modules.

Comparison settings. In the ADDRESSFACTORY system, comparison settings are understood as all of the settings relating to the comparison modules to be carried out and their options.

Comparison module. see Module.

D

Data exchange platform (DEP). Deutsche Post Direkt handles the secure exchange of personal data with its customers via the data exchange platform system. Data is transferred to and from the data exchange platform via a web interface or third-party software that uses the Secure File Transfer Protocol (SFTP).
The ADDRESSFACTORY system uses the data exchange platform to receive personal data from you and deliver the results of the comparison to you. The acceptance process is always transparent for you here. If you provide your data via the ADDRESSFACTORY WEB system, you then have direct contact with the platform if you choose the not real time provision option and download the results using the download action in the Projektmanager [Project Manager].

Degree of correction. In the information it provides, the ADDRESSFACTORY system distinguishes between slight corrections and significant corrections. With slight corrections, it is assumed that they improve the address provided without having any impact on the delivery probability. With significant corrections, it is assumed that they improve the delivery probability.

DoubleClean(DUB). Checking for duplicates in the ADDRESSFACTORY system is carried out by the DoubleClean module. DoubleClean enables you to carry out error-tolerant detection of individuals, households and buildings that appear in your data twice or multiple times. This type of multiple occurrence is referred to as a duplicate. For more information see DoubleClean (DUB).

Duplicate. see DoubleClean.

Duplicate checking. see DoubleClean.

E

Escape character. The escape character enables you to use the field delimiter character within limited fields.

Example: In the `"Kegelclub \"Alle Neune\""` field, the double quotation marks appear twice as field delimiters (first and last character) and twice as part of the field content. In order to separate the two different uses, the escape character (in this case the back slash) marks those uses of the double quotation marks that are not to be interpreted as separators (the two uses as part of the name “Alle Neune”).

Enhancement. see Address enhancement.

Extended fields. In the ADDRESSFACTORY system, extended fields are understood as simple pairs of keys and values that perform the following functions:

- first, with extended fields there is the option of “pushing” values through the comparison that are not to be interpreted or changed. This use case mostly occurs in the Web and Automatic product variants.
- second, with extended fields there is the option of returning values from the comparison which are not part of the main scope of the ADDRESSFACTORY and which therefore do not have an explicit representation in the system’s data model. Key examples of this application are personal credit rating inquiries, which deliver parts of their output in extended fields.

Only users of the DIRECT product variant have direct contact with extended fields.

F

Fake list. The fake list is a negative file that is predefined in ADDRESSFACTORY and against which you can check your data. The outcome of this check is the information, for each record provided, about whether this record is also contained in the file. The fake list contains names that are extremely likely to have been made up. This includes names of cartoon characters (“Donald Duck”), names of public figures (“Robert Redford”) and frequently used pseudo names (“Hans Mustermann” [John Smith/Sam Sample]). For more information, see FileMatch (NEG).

Field. An attribute of a record is referred to as a field, in the way that the first name within a record refers to the individual as a whole, for example. However, a field also always implicitly refers to the use of the field in the context of an address comparison. Thus the “Str” [“St.”] field will probably perform the “Straße” [“Street”] field function within an address comparison.

Field delimiter. The field delimiter marks column boundaries in such a way that the defined separator can also appear as part of the column contents.

Example: A comma is used as a separator in the following record "Import, Export und Service GmbH",Hauptstraße,2,12345,Musterstadt. So as not to erroneously break down the company name into two fields – Import and Export und Service GmbH – double quotation marks are used as field delimiters which keep all the contents of the field together.

Filter. A filter is understood as a reduction rule in the provision of result data. For example, the "Zustellbare Datensätze" ["Deliverable data records"] filter reduces the result data provided to you to those records that are positively known to Deutsche Post Direkt as deliverable. The combination of several filters with logical links is referred to as a filter set.

Filter set. A filter set is understood as the combination of several filters using logical links. The "Postalisch korrekt ODER Postalisch geringfügig korrigiert" ["Postal address correct OR postal address corrected slightly"] filter set combines the "Postalisch korrekt" ["Postal address correct"] and "Postalisch geringfügig korrigiert" ["Postal address corrected slightly"] filters using the logical ODER [OR] to create one filter set.

FormalNameCheck (FNC). FormalNameCheck is an address cleansing module that carries out the checking and correction of individuals, households and buildings. Fields typically edited by FormalNameCheck include: Form of address, title, first name, surname, noble title, name prefix, name suffix and house number. For more information, see FormalNameCheck (FNC).

Format (of input and output data). In the ADDRESSFACTORY system, the format of a file is understood as all the information that is necessary to break down the data it contains into individual records and fields. This information includes the file type (text with fixed column width, text with variable column width, etc.), the character set of the file (ISO-8859-x, UTF-8, etc.), the separator (where applicable), the field delimiter (where applicable), the escape character (where applicable) and the information about whether the first line of the file should be interpreted as the header.

G

GeoMatch (GEO). GeoMatch is an address enhancement module that enhances its records with geocoordinates. GeoMatch adds geocoordinates in a large number of common coordinate systems at the levels of buildings and streets. For more information, see GeoMatch (GEO).

H

Hardness. see Comparison hardness.

Header duplicate. The first record within a duplicate group – effectively the "original" – is referred to as the header duplicate of this group. The duplicate that appears the "earliest" in the "foremost" file should be marked as the header duplicate here. You define the priority order of your input files using the DoubleClean options; negative files are generally given priority over positive files. The other duplicates of a duplicate group are referred to as successive duplicates.

Household level. see Level.

I

Individual level. see Level.

Inter-duplicate. With duplicates, an inter-duplicate is one that is located in a different file from at least one other member of its duplicate group.

Intra-duplicate. With duplicates, an intra-duplicate is one that is located in a file together with all the other members of its duplicate group.

J

K

Key. see Status key.

Key system. The system that the ADDRESSFACTORY system uses to describe the work carried out on your data. The key system consists of a series of “elementary” postal statements (“zustellbar” [“deliverable”], “Hausanschrift” [“street address”], “geringfügig korrigiert” [“corrected slightly”], etc.) and a rule set according to which these elementary statements are assembled to form general statements on your data (“Diese Hausanschrift ist zustellbar” [“This street address is deliverable”], “Diese Hausanschrift wurde vom ADDRESSFACTORY System geringfügig korrigiert” [“This street address has been corrected slightly by the ADDRESSFACTORY system”]). For more information on the ADDRESSFACTORY key system, see **Introduction to the ADDRESSFACTORY key system.**

L

Level. In the ADDRESSFACTORY system, a level is understood as a set of fields of a record. The four levels known in the system, *street*, *building*, *household* and *individual*, are tailored in such a way that they cover an increasingly large proportion of the record.

LocalMatch (MDL). The LocalMatch module is an address enhancement module that you can use to enhance your data with socio-demographic information. The LocalMatch module currently only contains the RiskControl products from Deutsche Post Direkt. For more information, see LocalMatch (MDL).

M

Module. In the ADDRESSFACTORY system, a module is a coherent set of address cleansing or enhancement activities. The BasicAddressCheck module thus brings together all the postal checks and corrections, while the GeoMatch module combines all the services relating to the enhancement of geocoordinates.

MoveProfessional (MOV). The MoveProfessional module is an address cleansing module that carries out the checking of changes of address and the enhancement of relocation addresses. For more information, see MoveProfessional (MOV).

N

Negative file (see also Positive file). This contains data that you transfer to Deutsche Post Direkt from your own databases. Unlike positive files, the records contained in negative files are those that you wish to subsequently *exclude* from your mailing campaign or highlight in your database. Typical examples of negative files include those who refuse advertising or customers who are known to have poor payment behavior. The contents of your negative files are *not* sent back to you in a corrected form. Instead, your negative files are included in a duplicate comparison in order to thus identify records from *positive files* that are among the “black sheep”.

O

P

PhoneMatch (PHM). PhoneMatch is an address enhancement module that you can use to enhance your addresses with phone numbers. PhoneMatch adds the phone numbers of individuals and households, and can be restricted to records where you do not yet have a phone number. For more information, see PhoneMatch (PHM).

Positive file. This contains data that you transfer to Deutsche Post Direkt from your own databases. Positive files contain records that you wish to subsequently use in your mailing campaign or re-import into your database in a corrected form.

PremiumDeliveryCheck (PDC). PremiumDeliveryCheck is an address cleansing module that supplies deliverability and non-delivery information about individuals, households and buildings in its data. For more information, see PremiumDeliveryCheck (PDC).

Project. In the ADDRESSFACTORY system, a project is understood as a logical container for associated input files, comparison settings, comparison results, etc. The creation of a project is a prerequisite for performing an address comparison with the ADDRESSFACTORYWEB system.

Projektassistent [Project Assistant]. The Projektassistent [Project Assistant] is the most convenient way of defining an ADDRESSFACTORY project, performing an address comparison and downloading the results of the comparison.

Projektmanager [Project Manager]. The Projektmanager [Project Manager] is your starting point for your work with the ADDRESSFACTORYWEB system. The Projektmanager [Project Manager] offers you a searchable overview of your current and past projects, as well as access to all the actions that you can perform on these projects.

Provision. Following a successful address comparison with the ADDRESSFACTORY WEB system, you first have the option of evaluating the work that has been carried out using the summary logs and the price overviews. After accepting the result of the comparison, you have access to the data that has been compared. For this, you first define how you require the data (format, structure and filtering). The data is prepared on an individual basis, based on your settings. This preparation process is referred to within the ADDRESSFACTORY system as provision. The ADDRESSFACTORY system differentiates further between real time and not real time provision. You can find details on these types of provision on the following page: Basic principles of provision.

Q

R

Record. A record is understood as a coherent set of information (fields). For example, the specification of an individual with first name, surname, street, house number, postal code, town/city and other associated information is referred to as a record. In the ADDRESSFACTORY system, a line break is always interpreted as the syntactic end of a record.

Registration. In Deutsche Post Direkt's online services, registration is understood as the creation of a new user. A new online services user is initially given the privileges of an ADDRESSFACTORY test user.

Regular user. To find out more about regular users and the difference from test user status, see Restrictions on the test user.

RiskControl. The RiskControl product is part of the address enhancement module LocalMatch. In the context of the ADDRESSFACTORY WEB system, RiskControl offers you the option of enhancing your data with statistical credit rating information. RiskControl also offers users of the ADDRESSFACTORY DIRECT system personal credit rating information. For more information, see LocalMatch (MDL).

Robinson list. The Robinson list is a negative file that is predefined in ADDRESSFACTORY and against which you can check your data. The outcome of this check is the information, for each record provided, about whether this record is also contained in the file. With regard to the background of the Robinson list: *"The Robinson list is a non-profit organization that has set itself the goal of protecting consumers from unwanted marketing. To this end, users are offered the option of entering their details in the blacklist free of charge. The entries stored in this list can then be used by reputable companies for encrypted comparison against mailing lists or marketing lists, in order to delete undesirable contact details."* (Extract from www.robinsonliste.de)

S

Separator. The separator separates the columns in a text file with variable column width from one another.

> *Example: In a record in the form Hans,Mustermann,Hauptstraße,1,12345,Musterstadt, a comma is clearly used as the separator.*

Status key. Result data of the ADDRESSFACTORY does not only contain the corrected versions of your data. As a general rule, for each record you will also be provided with information about the changes that the system has made to your data or the statements that the system can make with regard to your data. The ADDRESSFACTORY system encodes these statements in short sequences of letters and numbers that are referred to as *status keys* (or *keys* for short). Using these status keys, it is possible for the human reader to identify the changes that have been carried out. The status keys are also suitable for further automatic processing, e.g. in order to only re-import those records that have also actually been changed back into your database.

Street level. see Level.

Structure (of input and output data). The ADDRESSFACTORY system understands the structure of a file as the specification of the "function" in which the individual fields should appear within the comparison.

> *Example: In the record Hans,Mustermann,Hauptstraße,1,12345,Testort, the individual comma-separated fields clearly have the functions "first name", "surname", "street of the street address", "house number of the street address", "postal code of the street address" and "town/city of the street address".*

Successive duplicate. The second record and all subsequent records within a duplicate group – effectively the "surplus records" – are referred to as the successive duplicates of this group (see also Header duplicate).

T

Test user. Users who have registered for the first time to use Deutsche Post Direkt's online services initially work as test users. To find out more about test user status and changing to regular user status, see Restrictions on the test user.

Test server. The ADDRESSFACTORY DIRECT test server is provided by Deutsche Post Direkt for non-binding integration tests. It again provides an implementation of the same interface that the real ADDRESSFACTORY DIRECT server implements. However, the test server only returns static changes to the data supplied by you and made-up status keys. At any time during the implementation, there is the option of contacting the real ADDRESSFACTORY DIRECT server instead of the test server through a simple configuration change.

U

V

W

X

Y

Z

7 Contact information

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